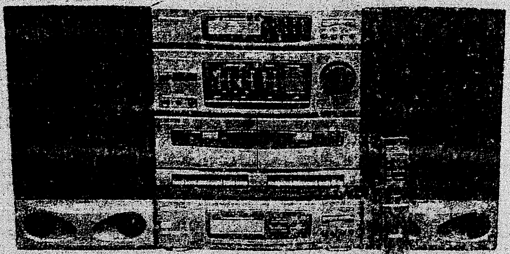
Mini System FW25/22

Service
Service
Service



Service Manual

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CLASS 1
LASER PRODUCT

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne"

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4822 725 24882
PCS 63 675

PHILIPS

Specifications

GENERAL

Mains voltage		: 230V
Mains frequency		: 50Hz
Power consumption		: 85W max.
Dimension centre unit		: (H)350 x (W)280 x (D)310mm

TUNER: FM SECTION

FM antenna		: 75 ohm unbalanced
Tuning range		: 87.5MHz – 107.9MHz
Tuning grid		: 50kHz/100kHz
IF frequency		: 10.7MHz
Sensitivity at 26dB S/N		: 10uV
Sensitivity at ±300kHz bandwidth		: 30dB
IF rejection		: 55dB
Image rejection		: 30dB

TUNER: AM SECTION

AM antenna		: Wire loop
Tuning range	MW	: 522kHz – 1611kHz
	LW	: 146kHz – 290kHz
Tuning grid		: 9kHz/10kHz
IF frequency		: 450kHz
Sensitivity at 20dB S/N	MW	: 708uV/m
	LW	: 1259uV/m
Selectivity at 20kHz bandwidth	MW	: 24dB
IF rejection	MW	: 45dB
	LW	: 35dB
Image rejection	MW	: 36dB
	LW	: 34dB

AMPLIFIER

Output power at 10% distortion mains		: 2 x 2 stereo
Speaker impedance		: 2 x 8 ohm
Frequency response within ±3dB		: 40Hz – 20kHz
Equalizer control		: -8dB to +8dB
Dynamic bass boost		: ±3dB at 100Hz
Input sensitivity	Aux	: 150mV

CASSETTE RECORDER

Number of track		: 2 x 2 stereo
Tape speed		: 4.76 cm/sec±2%
		2 x 4.75 cm/sec
Wow and flutter		: 0.25%
Recording playback frequency response with in 6dB		: 125 – 10kHz
Signal to noise ratio		: 45dB
Oscillator frequency		: 74kHz ± 4kHz

COMPACT DISC

Frequency response within ±2dB		: 20Hz – 20kHz
Signal/Noise ratio		: 50dB
Distortion at 1kHz		: 0.3%
Channel separation at 1kHz		: 45dB
Channel difference		: ±1dB
De-emphasis		: ±2dB

CONTROLS

1 POWER BUTTON
2 STANDBY INDICATOR
3 REMOTE SENSOR
4 TUNER/FUNCTION DISPLAY
5 GRAPHIC EQUALIZER (3 BAND)
6 BALANCE CONTROL
7 POWER LEVEL INDICATOR
8 DIGITAL BUTTONS 1–8
9 TUNING UP DOWN
10 AM/FM BAND BUTTON
11 MEMORY BUTTONS
12 FM STEREO BUTTON
13 AUTO/MANUAL BUTTON
14 VOLUME CONTROL
15 SOURCE SELECTION BUTTONS
16 CASSETTE COMPARTMENT DECK 2
17 CONTROLS DECK 2 (Playback)
18 CD CONTROLS
19 CD DISPLAY
20 CONTROLS DECK 1 (Record/Play)
21 CASSETTE COMPARTMENT DECK 1
22 PHONES
23 HIGH SPEED DUBBING BUTTON
24 BASS BOOST BUTTON

CONNECTIONS

A 4P SPEAKER TERMINAL
B&C 2P ANTENNA TERMINAL
D 2P RCA JACK
E CORD STOPPER 2271
F Not applicable
G SLIDE SWITCH
H Not applicable

SERVICE AIDS

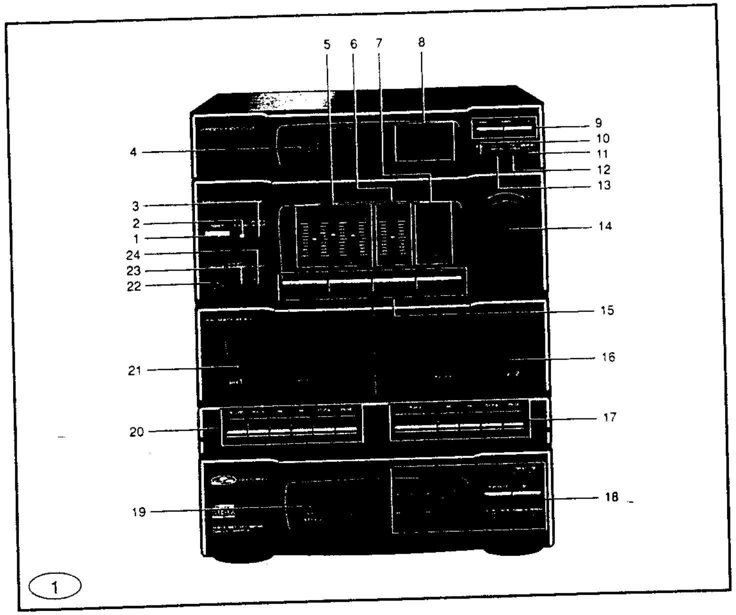
Test cassette:

MTT-111	Wow and flutter	4822 397 30159
MTT-114	Azimuth	4822 397 30225 (MTT-255)
SBC 419	Test cassette Chrome	4822 397 30069
SBC 420	Test cassette Ferro	4822 397 30071

Compact Disc:

YEDS-18		
SBC426/426A	Test disc 5/5A	4822 397 30096
SBC421	Test disc 3	4822 397 30085
Disc hold-down		4822 532 60906
7th order filter		4822 395 30204

Location of Controls and Connections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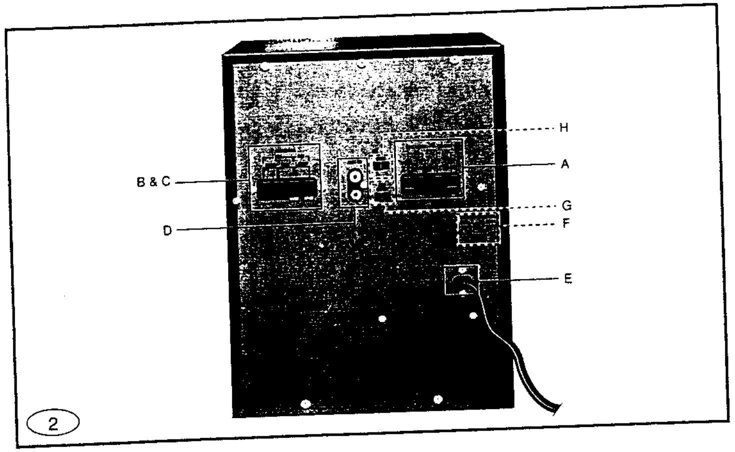
18

①



②

Disassembly Diagram

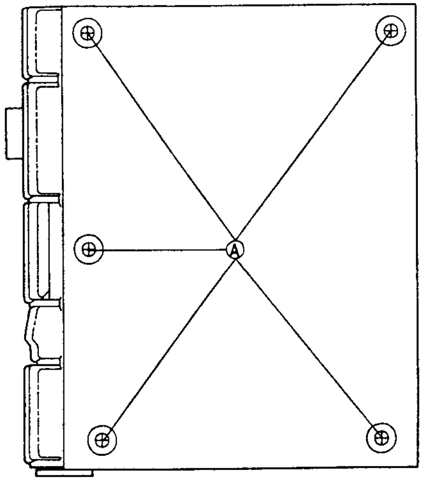


Figure 1

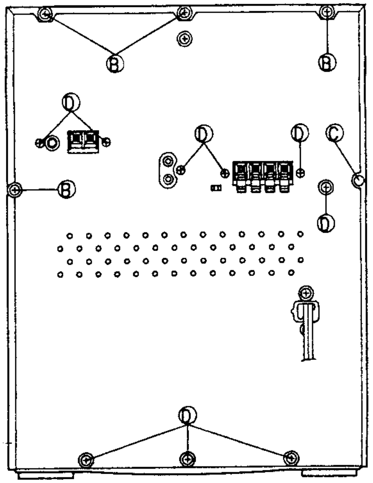


Figure 2

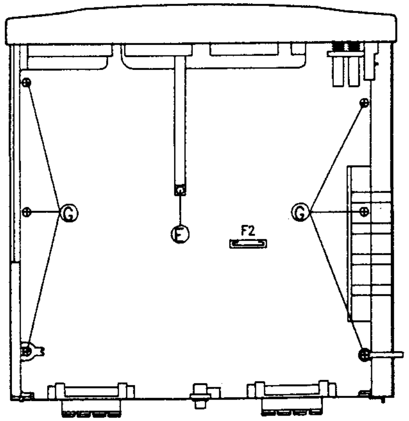


Figure 3

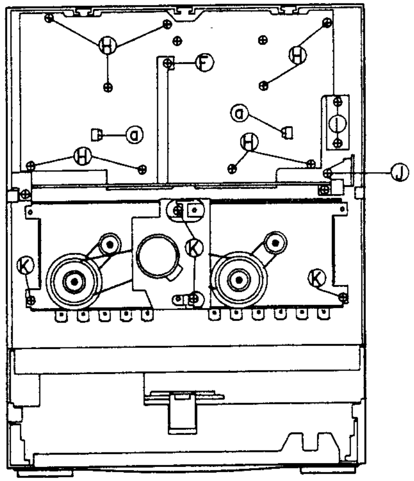

H
F
H
a
a
H
H
J
K
K
K

Figure 4

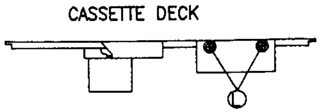

CASSETTE DECK
L

Figure 5

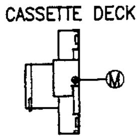

CASSETTE DECK
M

Figure 6

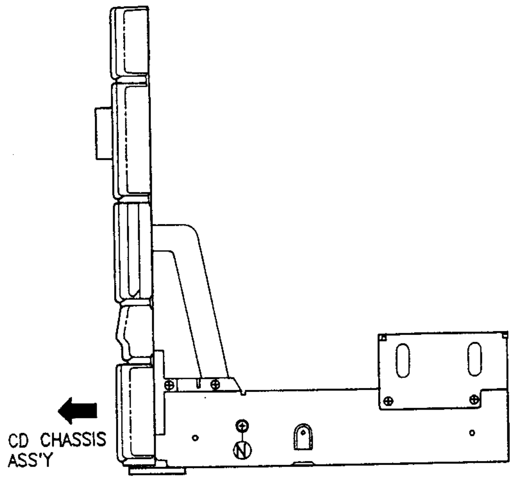


Figure 7

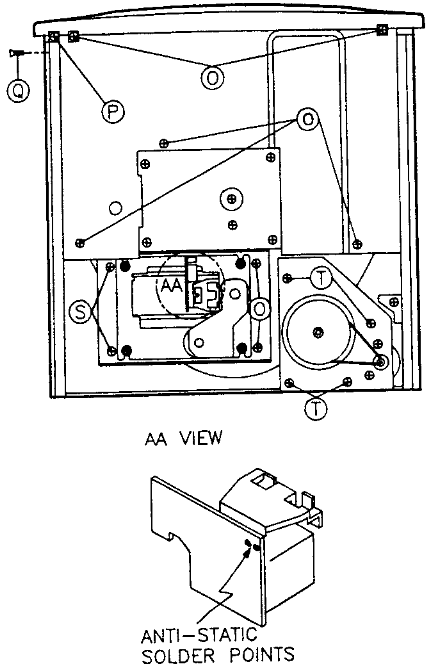


Figure 8

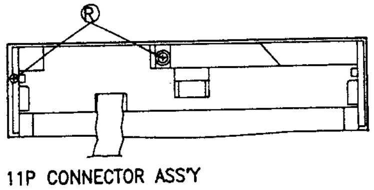


Figure 9

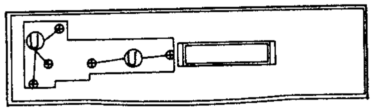


Figure 10

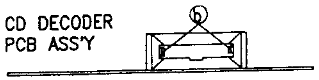


Figure 11

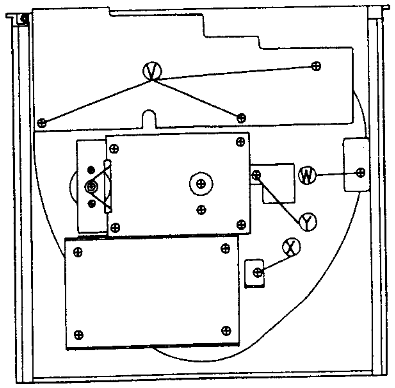


Figure 12

Disassembly Instructions

Step 1: To Remove Top Cover & Back Board & Tuner Box PCB

1. Remove 10 screws (A), five on each right and left side of top cover. (See fig. 1)
2. Remove 4 screws (B) from the top cover. (See fig. 2)
3. Remove 1 p-rivet (C) from the top cover. (See fig. 2)
4. Top cover can now be removed.
5. Remove 9 screws (D) from the back board. (See fig. 2)
6. Back board and tuner box PCB can now be removed.

Step 2: To Remove Main PCB & Front PCB & Power PCB & Headphone PCB

1. Remove 1 p-rivet (E) from the PCB bracket. (See fig. 3)
2. Remove 1 screw (F) from the PCB bracket. (See fig. 4)
3. PCB bracket can now be removed.
4. Remove 6 screws (G) from the main PCB. (See fig. 3)
5. Main PCB can now be removed.
6. Remove 9 screws (H) from the front PCB. (See fig. 4)
7. Release 2 plastic hooks (a) first, then remove front PCB. (See fig. 4)
8. Front PCB can now be removed.
9. Remove 2 screws (I) from the power PCB. (See fig. 4)
10. Power PCB can now be removed.
11. Remove 1 screws (J) from the headphone jack holder. (See fig. 4)
12. Headphone PCB can now be removed.

Step 3: To Remove Cassette Deck & Deck Connector PCB & R/P Switch PCB

1. Remove 4 screws (K) from the cassette deck. (See fig. 4)
2. Cassette deck can now be removed.
3. Remove 2 screws (L) from the deck connector PCB. (See fig. 5)
4. Deck connector PCB can now be removed.
5. Remove 1 screw (M) from the R/P switch PCB. (See fig. 6)
6. R/P switch PCB can now be removed.

Step 4: To Remove CD Chassis Ass'y

1. Disconnect 11P connector ass'y from the main PCB ass'y (F2). (See fig. 3)
2. Release 2 screws (N) in each side, then pull out the CD chassis ass'y, (See fig. 7)
3. CD chassis ass'y can now be removed.

Step 5: To Remove CD Front Escutcheon & CD Player Ass'y & T.T Motor Ass.Y

1. Remove 5 screws (O) from the CD escutcheon. (See fig. 1)
2. CD PCB cover can now be removed.
3. Remove 1 screw (P) from the CD escutcheon. (See fig. 8)
4. Remove 1 screw (Q) fron the CD escutcheon. (See fig. 8)
5. Remove 2 screws (R) front the CD escutcheon. (See fig. 9)
6. CD escutcheon can now be removed
7. Remove 4 screws (S) from the CD player ass'y (See fig. 8)
8. CD player ass'y can now be removed.
9. Remove 4 screws (T) from the T.T motor ass'y (See fig. 8)
10. Short the 2 anti-static solder points first, if the connectors to the laser unit needs to be disconnected. (See fig. 8)

Step 6: To Remove CD Control PCB & CD Lamp PCB

1. Remove 5 screws (U) from the CD control PCB. (See fig. 10)
2. CD control PCB can now be removed.
3. Release 2 plastic hooks (b) first, then remove CD lamp PCB. (See fig. 11)
4. CD lamp PCB can now be removed.

Step 7: To Remove CD Decoder PCB & CD SUB PCB & CD Sensor PCB & CD SUB I PCB

1. Remove 3 screws (V) from the CD decoder PCB. (See fig. 12)
2. CD decoder PCB can now be removed.
3. Remove 1 screw (W) from the CD SUB PCB. (See fig. 12)
4. CD SUB PCB can now be removed.
5. Remove 1 screw (X) from the CD sensor PCB. (See fig. 12)
6. CD sensor PCB can now be removed.
7. Remove 1 screw (Y) from teh CD SUB I PCB. (See fig. 12)
8. CD SUB I PCB can now be removed.

CAUTION:
The solder link across the 2 anti-static solder points must be removed only after the connectors to the laser unit are plugged on.
Note: All replacement CD mechanisms (spare parts) have the 2 anti-static solder points pre-shorted as protection against ESD.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les piéces de rechange identiques à celles spécifiées.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

S Varning!

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varo!

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen!

GB **WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

F **ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

ESD

D **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

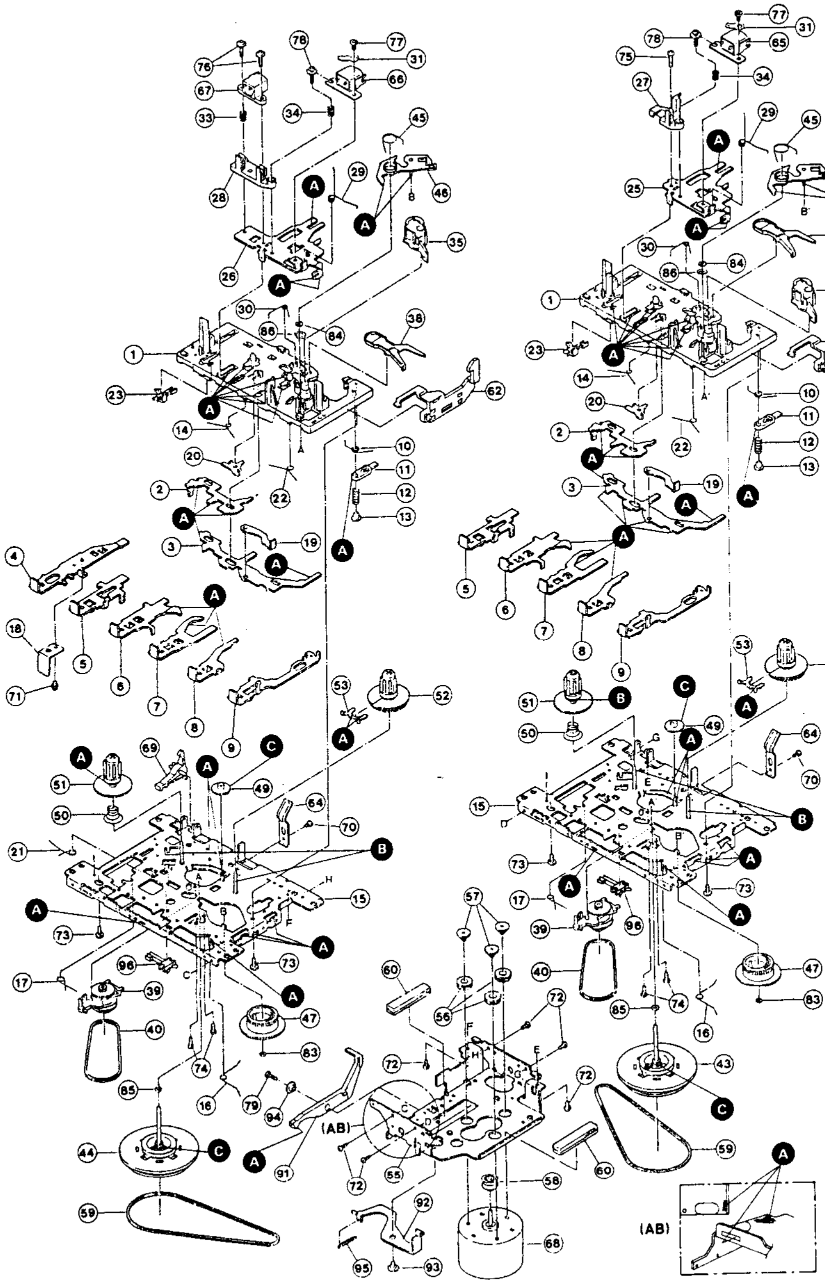
NL **WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

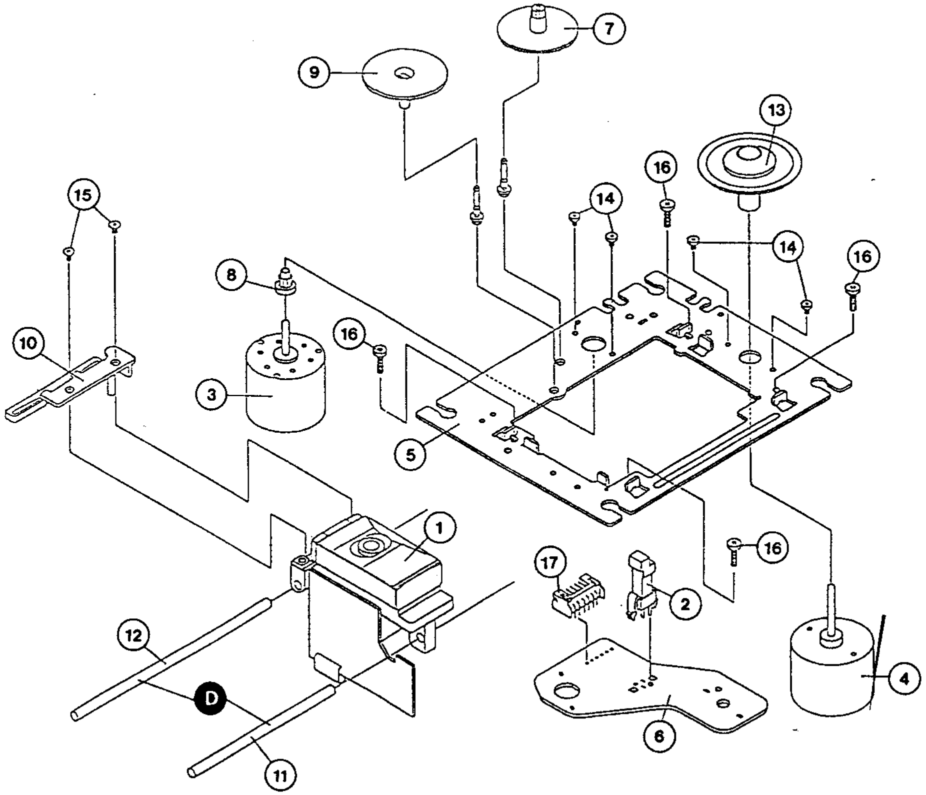
I **AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

Tape Deck Greasing Drawing



CD Greasing Drawing


1
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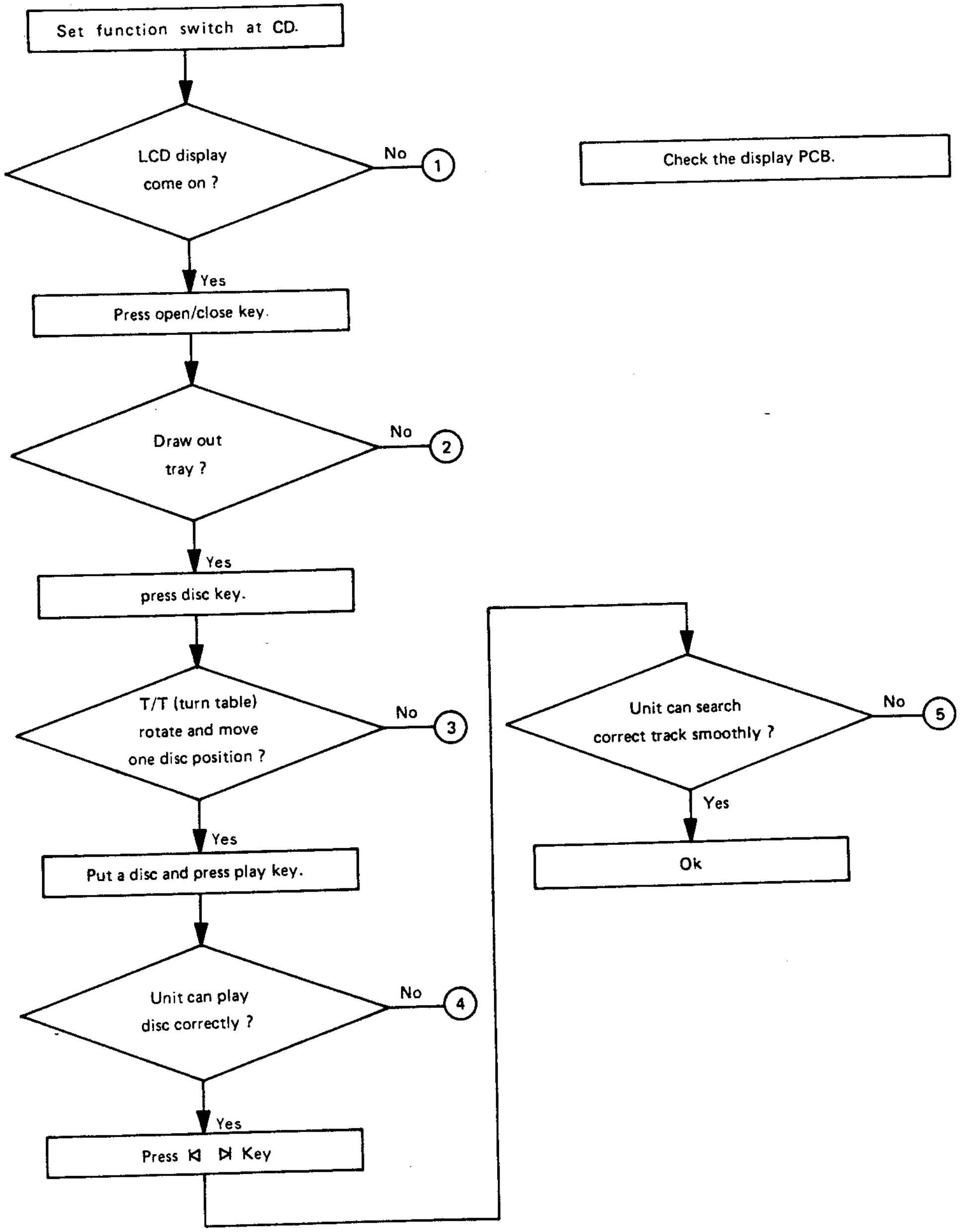
17
D

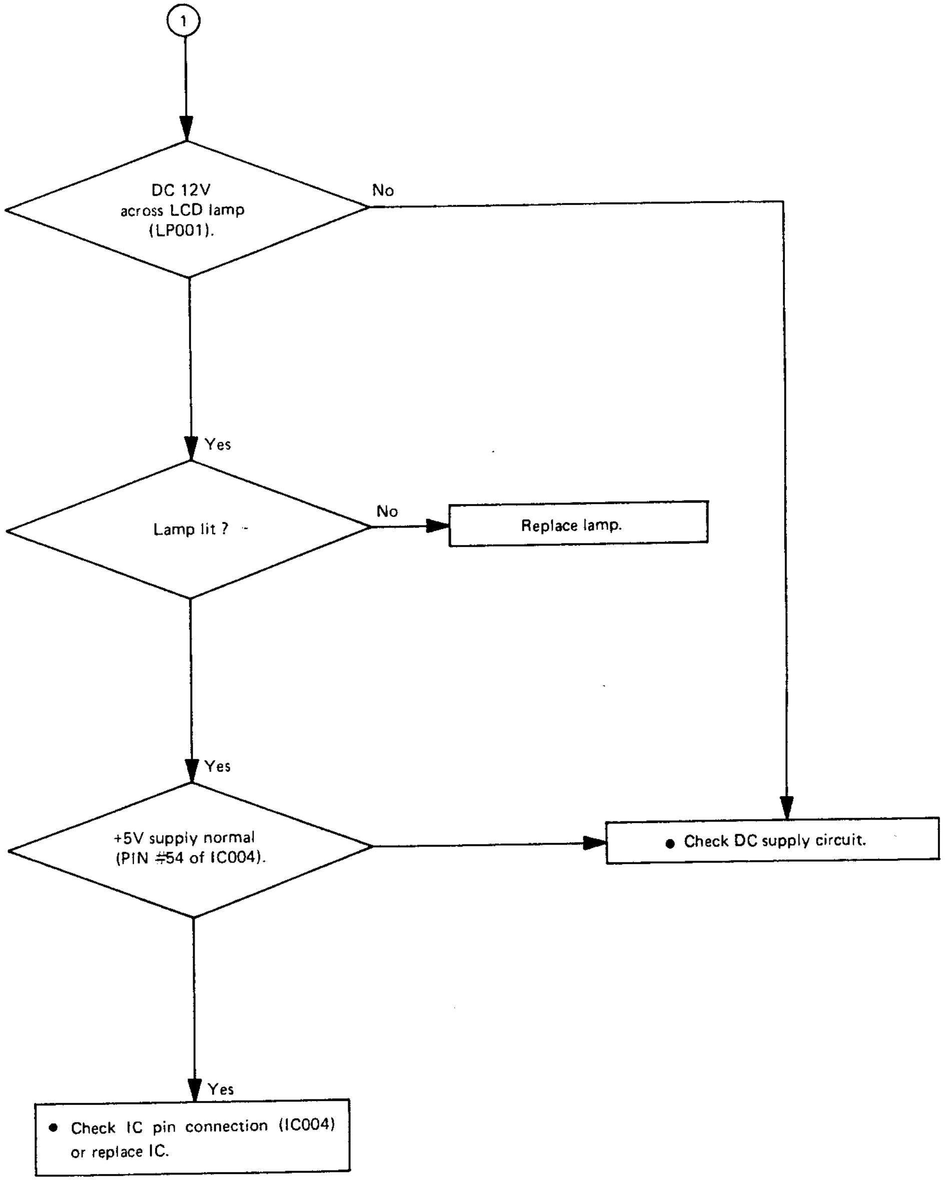
TYPE OF GREASE AND OILS

A:	G-425A	4822 390 20139
B:	G-40M	5322 390 40088
C:	EM-50L	4822 390 20139
D:	DIAMON GREASE (MULTI PURPOSE #2)	4822 389 10001

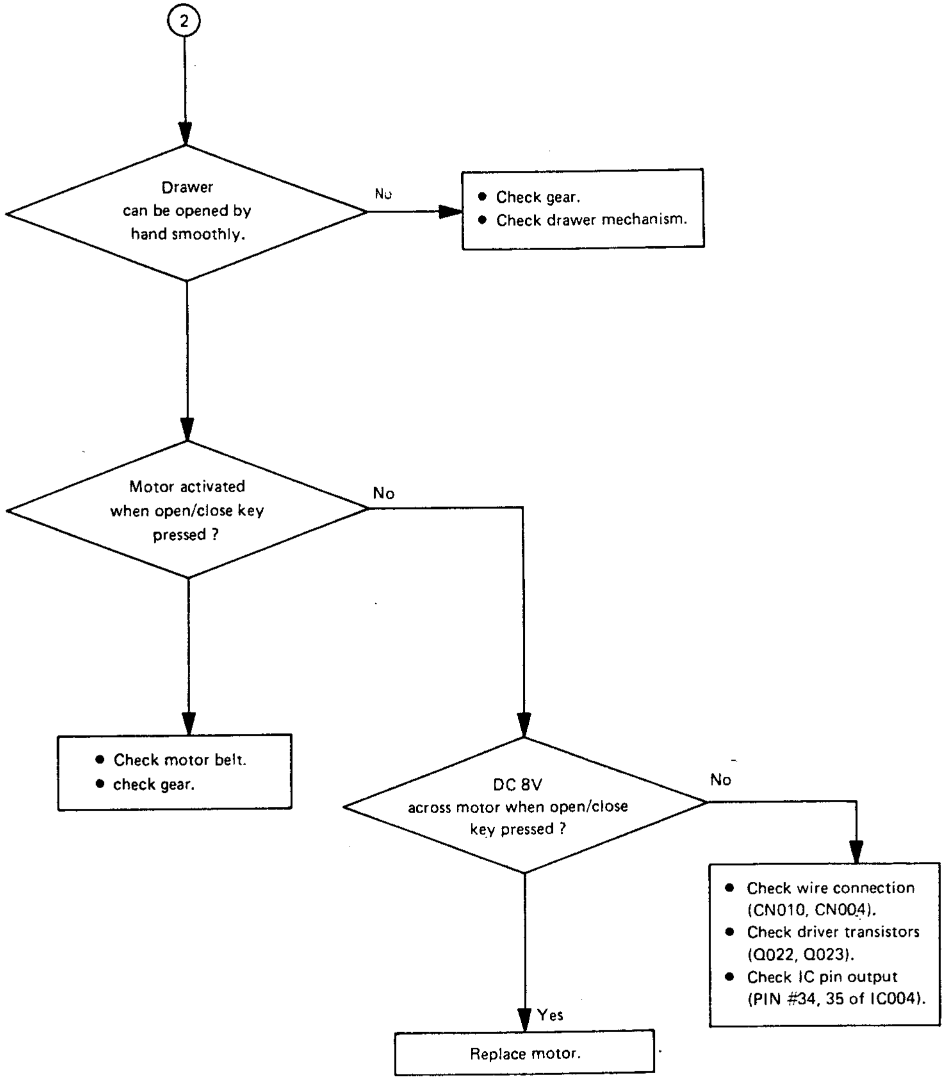
Troubleshooting Chart: CD


Set function switch at CD.
LCD display come on ?
No
①
Yes
Check the display PCB.
Press open/close key.
Draw out tray ?
No
②
Yes
press disc key.
T/T (turn table) rotate and move one disc position ?
No
③
Yes
Put a disc and press play key.
Unit can play disc correctly ?
No
④
Yes
Press ⏮ ⏭ Key
Unit can search correct track smoothly ?
No
⑤
Yes
Ok

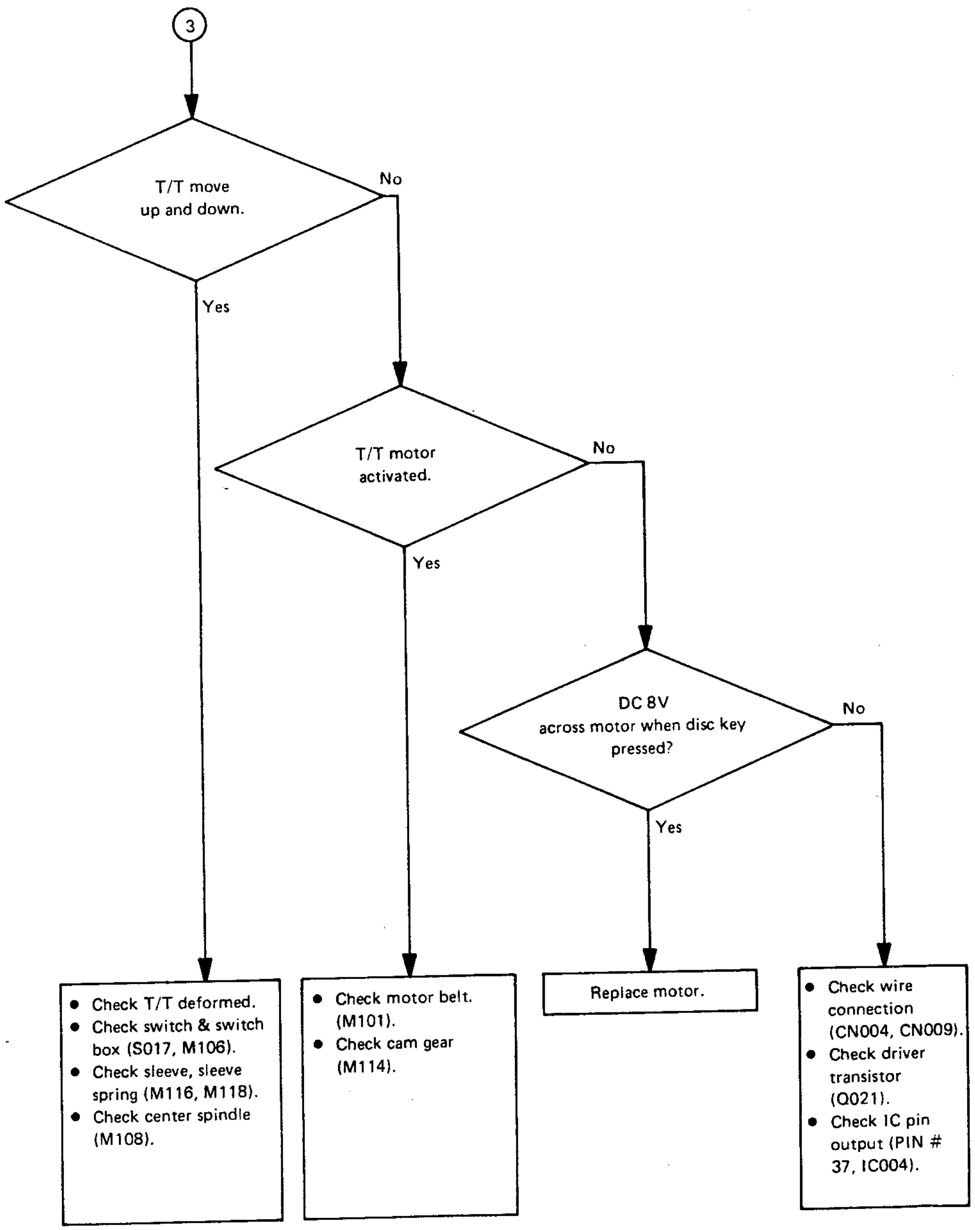
① No display shown.


①
DC 12V across LCD lamp (LP001).
No
Yes
Lamp lit ?
No
Replace lamp.
Yes
+5V supply normal (PIN #54 of IC004).
● Check DC supply circuit.
Yes
● Check IC pin connection (IC004) or replace IC.

② No drawer open/close operation.


2
Drawer can be opened by hand smoothly.
No
Check gear.
Check drawer mechanism.
Motor activated when open/close key pressed ?
No
Check motor belt.
check gear.
DC 8V across motor when open/close key pressed ?
No
Check wire connection (CN010, CN004).
Check driver transistors (Q022, Q023).
Check IC pin output (PIN #34, 35 of IC004).
Yes
Replace motor.

③ T/T move not correct.


3
T/T move up and down.
No
Yes
T/T motor activated.
No
Yes
DC 8V across motor when disc key pressed?
No
Yes
• Check T/T deformed.
• Check switch & switch box (S017, M106).
• Check sleeve, sleeve spring (M116, M118).
• Check center spindle (M108).
• Check motor belt. (M101).
• Check cam gear (M114).
Replace motor.
• Check wire connection (CN004, CN009).
• Check driver transistor (Q021).
• Check IC pin output (PIN # 37, IC004).

④ Can not play disc.

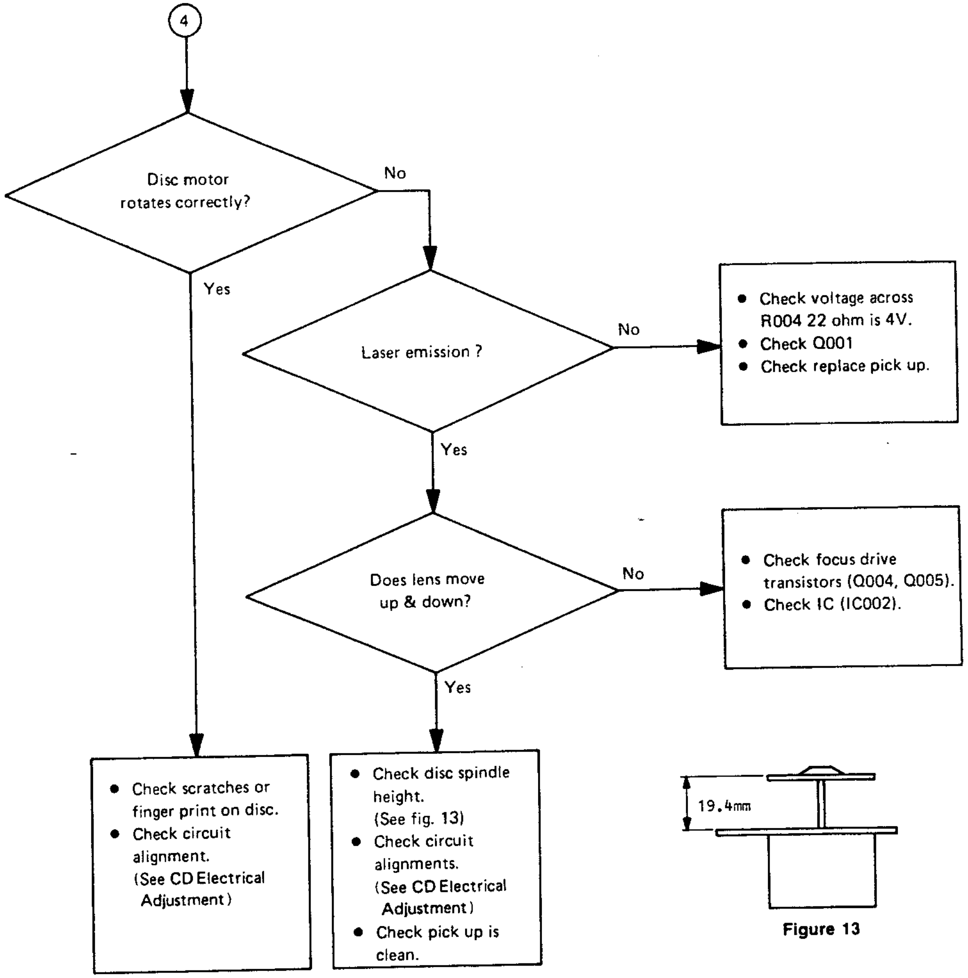
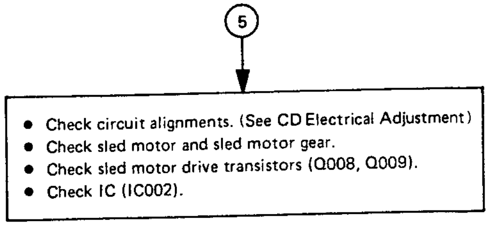
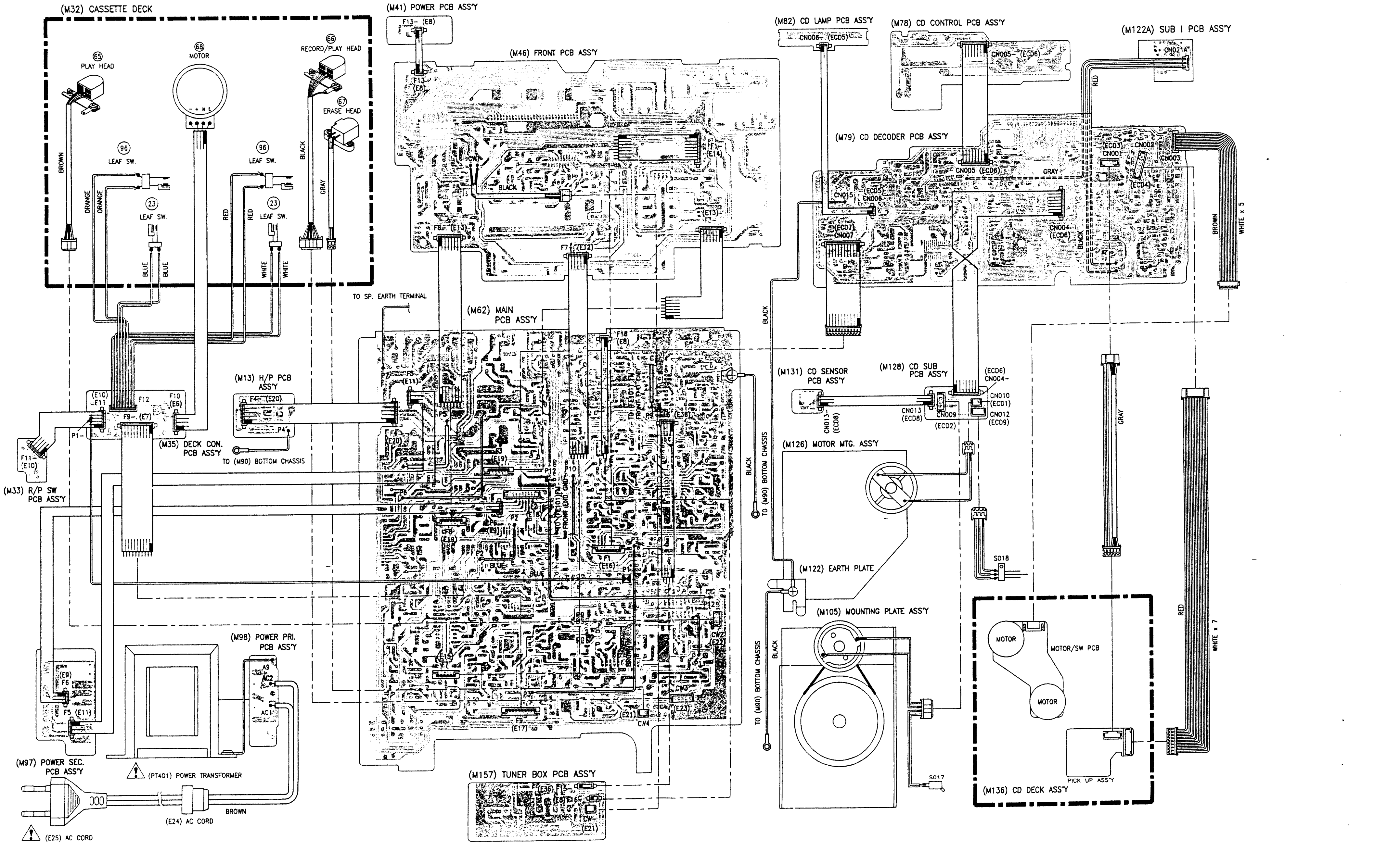

4
Disc motor rotates correctly?
No
Yes
Laser emission ?
No
Yes
• Check voltage across R004 22 ohm is 4V.
• Check Q001
• Check replace pick up.
Does lens move up & down?
No
Yes
• Check focus drive transistors (Q004, Q005).
• Check IC (IC002).
• Check scratches or finger print on disc.
• Check circuit alignment. (See CD Electrical Adjustment)
• Check disc spindle height. (See fig. 13)
• Check circuit alignments. (See CD Electrical Adjustment)
• Check pick up is clean.
19.4mm

Figure 13

⑤ Can not search track smoothly.


5
• Check circuit alignments. (See CD Electrical Adjustment)
• Check sled motor and sled motor gear.
• Check sled motor drive transistors (Q008, Q009).
• Check IC (IC002).

Wiring Diagram-Component Side


(M32) CASSETTE DECK
65 PLAY HEAD
68 MOTOR
66 RECORD/PLAY HEAD
67 ERASE HEAD
96 LEAF SW.
96 LEAF SW.
23 LEAF SW.
23 LEAF SW.
BROWN
ORANGE
ORANGE
RED
RED
BLACK
GRAY
BLUE
BLUE
WHITE
WHITE
(M41) POWER PCB ASS'Y
F13- (E8)
F13
(E8)
(M46) FRONT PCB ASS'Y
CW1
BLACK
F14
(E14)
(E13)
F8
(E13)
F7
(E12)
(M82) CD LAMP PCB ASS'Y
CN006- (ECD5)
(M78) CD CONTROL PCB ASS'Y
CN005- (ECD6)
(M122A) SUB I PCB ASS'Y
CN021A
RED
(M79) CD DECODER PCB ASS'Y
CN005 (ECD6)
GRAY
(ECD3)
CN001
CN002
CN003
(ECD4)
CN015
(ECD5)
CN006
(ECD7)
CN007
CN004
(ECD6)
BLACK
BROWN
WHITE x 5
TO SP. EARTH TERMINAL
(M62) MAIN PCB ASS'Y
F18
(E8)
F5
(E11)
P5
F4
(E20)
P5
(E19)
P12
P2
(E19)
(E9)
F2
FRONT END GND
(E16)
P3
BLUE
BLUE
(E38)
P11
CW2
(E22)
P7
(E15)
CW3
(E21)
(E23)
CW4
F9
(E17)
BLACK
(M13) H/P PCB ASS'Y
F4- (E20)
P4
TO (M90) BOTTOM CHASSIS
(E10)
F11
F12
F10
(E6)
F9- (E7)
P1
(M35) DECK CON. PCB ASS'Y
F11-
(E10)
(M33) R/P SW PCB ASS'Y
BLACK
TO (M90) BOTTOM CHASSIS
(M131) CD SENSOR PCB ASS'Y
CN013- (ECD8)
(M128) CD SUB PCB ASS'Y
(ECD6)
CN004-
CN010
(ECD1)
CN012
(ECD9)
CN013
(ECD8)
CN009
(ECD2)
(M126) MOTOR MTG. ASS'Y
S018
GRAY
(M122) EARTH PLATE
(M105) MOUNTING PLATE ASS'Y
BLACK
TO (M90) BOTTOM CHASSIS
S017
MOTOR
MOTOR/SW PCB
MOTOR
PICK UP ASS'Y
(M136) CD DECK ASS'Y
RED
WHITE x 7
(E9)
F6
F5 (E11)
(M98) POWER PRI. PCB ASS'Y
A9
AC2
AC1
(M97) POWER SEC. PCB ASS'Y
(PT401) POWER TRANSFORMER
BROWN
(E24) AC CORD
(E25) AC CORD
(M157) TUNER BOX PCB ASS'Y
(E36)
F1
(E8)
CW
(E21)

LW/MW/FM IF & RF Adjustments

Equipment required:
1. AM signal generator.
2. FM signal generator.
3. VTVM.
4. DC volt Meter.

Notes:
1. Signal input must be as low as possible to avoid overload and clipping. (Use highest sensitivity of output indicator).
2. Volume control at maximum, balance and tone control, at mechanical center.
3. Standard modulation is 400 Hz at 30% amplitude for MW, 1000 Hz at 22.5 kHz deviation at 98MHz for FM (Mono), 1kHz at 75kHz deviation for FM (Stereo).
4. Connect 8 ohm load accross speaker jack.

MW IF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
MW IF sweep generator connected to a standard radiating loop ◇B	Sweep centered 450 kHz	Oscilloscope connected to MW test point IF O/P (TP101) and GND. ◇1	Tuning to Lowest frequency	T104 (See Fig. 18)	Adjust for maximum output (See Fig. 14)
	Repeat adjustment as necessary for maximum sensitivity.				

LW/MW RF Adjustment

Signal Source	Signal Generator Frequency		Alignment Indicator	Frequency Setting		Adjustment	Remarks
AM signal generator connected to a standard radiating loop ◇B	MW	522kHz	DC meter across J104 and GND. ◇2	Lowest freq.		T103 T105 (See Fig. 18)	DC Meter 1.1V±0.05V
	LW	146kHz					DC Meter 1.0V±0.05V
	MW	1611kHz		Highest freq.		TC103 TC105 (See Fig. 18)	DC Meter 7.6V±0.05V
	LW	290kHz					DC Meter 5.3V±0.05V
	Repeat adjustments as necessary to obtain frequency range						Adjust for maximum output
	MW	603kHz	VTVM across speaker jack (Using 8 ohm resistive load) ◇3	MW	600kHz	L104 L105 (See Fig. 18)	
	LW	164kHz		LW	164kHz		
	MW	1404kHz		MW	1400kHz	TC102 TC104 (See Fig. 18)	
	LW	272kHz		LW	272kHz		
	Repeat adjustments as necessary to minimize tracking error.						

FM IF Adjustment

Signal Source	Signal Generator	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM IF sweep generator connected to Ext. Ant. terminal ◇A	Sweep centered 10.7 MHz	Oscilloscope connected to IF test point IF O/P TP101 and GND. ◇1	Tuning to Lowest frequency.	T102 (See Fig. 18)	Adjust for maximum amplitude and proper linearity between ± 100kHz markers. (See Fig. 15)

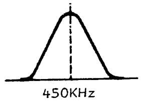


Figure 14

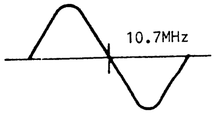


Figure 15

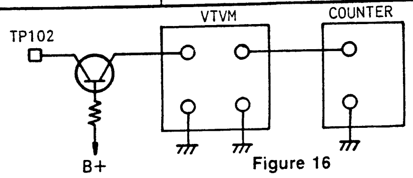


Figure 16

FM RF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM signal generator connected to Ext. Ant. terminal. matching network used ◇A	87.5MHz	DC meter connected to (J104) and GND. ◇2	Lowest freq.	NONE	DC Meter to indicate 1.55V±0.15V
	108MHz		Highest freq.	NONE	DC Meter to indicate 7.8V±0.4V
	Repeat adjustments as necessary to obtain frequency range				
	90 MHz (Modulated)	VTVM across SP. jacks (using 8 ohm resistive load) ◇3	90 MHz	NONE	Check for maximum output
	106 MHz (Modulated)		106MHz	NONE	
	Repeat adjustment as necessary to minimize tracking error.				

FM MPX Adjustment

Equipment required:
1. Signal generator . . . . .Modulation rate by pilot signal. 10%
   Modulation rate by main signal (L+R). 45%
   Modulation rate by sub signal (L–R). 45%
2. Frequency counter, Dummy antenna, VTVM.
   Band switch to FM. Tuning approx., 98MHz.

Item	Signal Source	Signal Generator Frequency	Alignment Indicator	Dial Setting	Tuning Adjustment	Remarks
Adjustment of pilot Signal ◇A	FM signal generator connected to FM Ext. Ant terminal Matching network used. Modulation OFF.	98 MHz (1 mV)	Frequency counter connected to TP102 and GND. (See Fig. 16) ◇4	98 MHz	SVR101 (See Fig. 18)	Measure pilot signal only and adjust for 76 kHz ±200 Hz

Tape Speed Adjustment

Normal Speed Adjustment

Notes: 1. Use TEAC TEST TAPE, MTT-111
(3 kHz signals are recorded on the tape.)

Step	Subject	Measure Output	Seting	Adjustment	Adjust For	Remarks
1	Normal speed adj.	SP. terminal Frequency counter.	Playback the TEST TAPE MTT-111 B side mecha.	Turn the SVR301 on the main board.	2940Hz-3090Hz	(See Fig. 18)

High Speed Adjustment

Notes: 1. Set the DUBBING switch . . . . ON
2. Set the NORMAL/HIGH switch . . . . .HIGH

Step	Subject	Measure Output	Setting	Adjustment	Check For	Remarks
1	High speed adj.	SP. terminal Frequency counter.	Playback the TEST TAPE MTT-111 A side mecha.	NONE	5.2kHz-5.6kHz	

Azim

Notes:

a-Side

St
1

b-Side

S
1

FM RF Adjustment

Signal Source	Signal Generator Frequency	Alignment Indicator	Frequency Setting	Adjustment	Remarks
FM signal generator connected to Ext. Ant. terminal. matching network used ◇A	87.5MHz	DC meter connected to (J104) and GND. ◇2	Lowest freq.	NONE	DC Meter to indicate 1.55V±0.15V
	108MHz		Highest freq.	NONE	DC Meter to indicate 7.8V±0.4V
	Repeat adjustments as necessary to obtain frequency range				
	90 MHz (Modulated)	VTVM across SP. jacks (using 8 ohm resistive load) ◇3	90 MHz	NONE	Check for maximum output
	106 MHz (Modulated)		106MHz	NONE	
	Repeat adjustment as necessary to minimize tracking error.				

FM MPX Adjustment

Equipment required:

1. Signal generator . . . . .Modulation rate by pilot signal. 10%
   Modulation rate by main signal (L+R) 45%
   Modulation rate by sub signal (L−R). 45%
2. Frequency counter, Dummy antenna, VTVM.
   Band switch to FM. Tuning approx., 98MHz.

Item	Signal Source	Signal Generator Frequency	Alignment Indicator	Dial Setting	Tuning Adjustment	Remarks
Adjustment of pilot Signal ◇A	FM signal generator connected to FM Ext. Ant terminal Matching network used. Modulation OFF.	98 MHz (1 mV)	Frequency counter connected to TP102 and GND. (See Fig. 16) ◇4	98 MHz	SVR101 (See Fig. 18)	Measure pilot signal only and adjust for 76 kHz ±200 Hz

Tape Speed Adjustment

Normal Speed Adjustment

Notes: 1. Use TEAC TEST TAPE, MTT-111
(3 kHz signals are recorded on the tape.)

Step	Subject	Measure Output	Seting	Adjustment	Adjust For	Remarks
1	Normal speed adj.	SP. terminal Frequency counter.	Playback the TEST TAPE MTT-111 B side mecha.	Turn the SVR301 on the main board.	2940Hz-3090Hz	(See Fig. 18)

High Speed Adjustment

Notes: 1. Set the DUBBING switch . . . . ON
2. Set the NORMAL/HIGH switch . . . . .HIGH

Step	Subject	Measure Output	Setting	Adjustment	Check For	Remarks
1	High speed adj.	SP. terminal Frequency counter.	Playback the TEST TAPE MTT-111 A side mecha.	NONE	5.2kHz-5.6kHz	

Azimuth Adjustment

Notes: 1. Before this adjustment, clean REC/P.B. head surface.
2. For this adjustment, use TEAC TEST TAPE MTT-114.

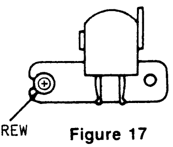


Figure 17

a-Side Mecha. Adjustment

Step	Subject	Measure Output	Setting	Adjustment	Adjust For	Remarks
1	P.B. head adj.	SP. terminal VTVM and scope.	Playback the TEST TAPE MTT-114.	Adjust the azimuth adjusting screw in Fig. 17	Max. output both channels.	After this adjustment, lock the screw with paint.

b-Side Mecha. Adjustment

Step	Subject	Mesure Output	Setting	Adjustment	Adjust For	Remarks
1	REC/P.B. head adj.	SP. terminal VTVM and scope.	Playback the TEST TAPE MTT-114.	Adjust the azimuth adjusting screw in Fig. 17	Max. output both channels.	After this adjustment. lock the screw with paint.

Adjustment Locations

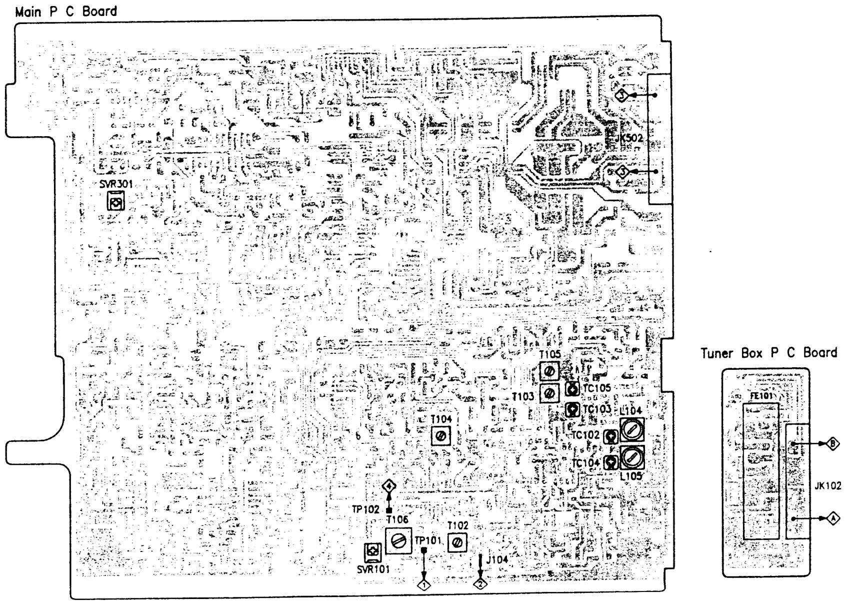
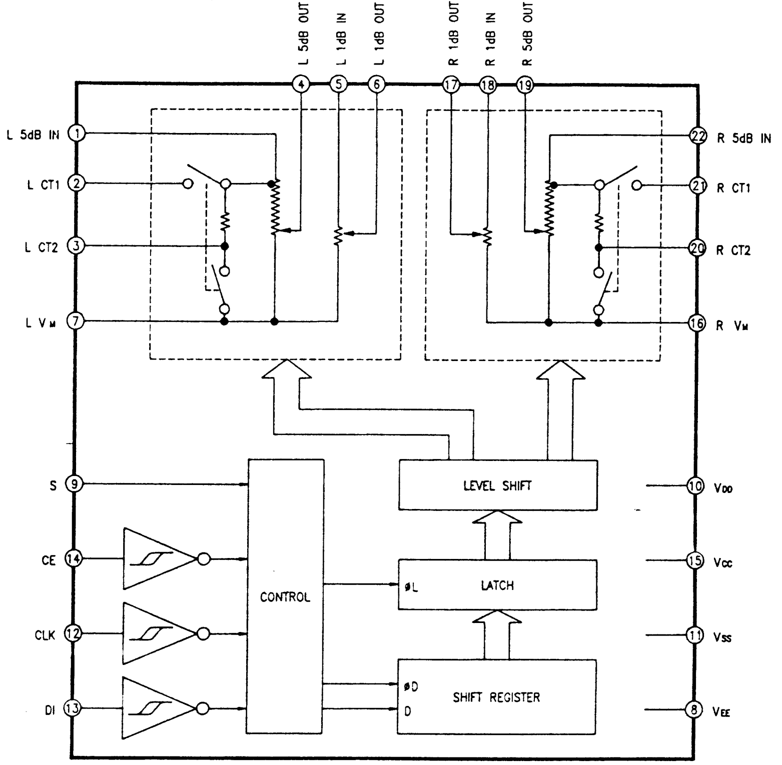


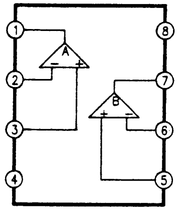
Figure 18

IC BLOCK

IC203 LC7535

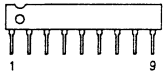

L 5dB OUT
L 1dB IN
L 1dB OUT
R 1dB OUT
R 1dB IN
R 5dB OUT
4
5
6
17
18
19
L 5dB IN
1
L CT1
2
L CT2
3
L Vм
7
R 5dB IN
22
R CT1
21
R CT2
20
R Vм
16
S
9
CE
14
CLK
12
DI
13
CONTROL
LEVEL SHIFT
øL
LATCH
øD
D
SHIFT REGISTER
10
VDD
15
Vcc
11
Vss
8
VEE

IC202,IC503 NJM4558S

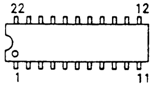

1
2
3
4
8
7
6
5
A
B
-
+
+
-

IC/TRANSISTORS CONNECTION:

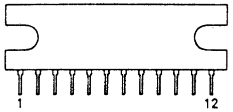
IC202,IC503 NJM4558S



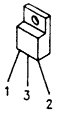
IC203 LC7535



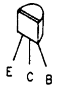
IC502 LA4282



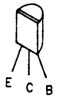
IC401 NJM78M05A
IC402 UPC78M12H
IC403 NJM78M24A



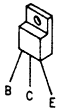
OTHER TRANSISTORS



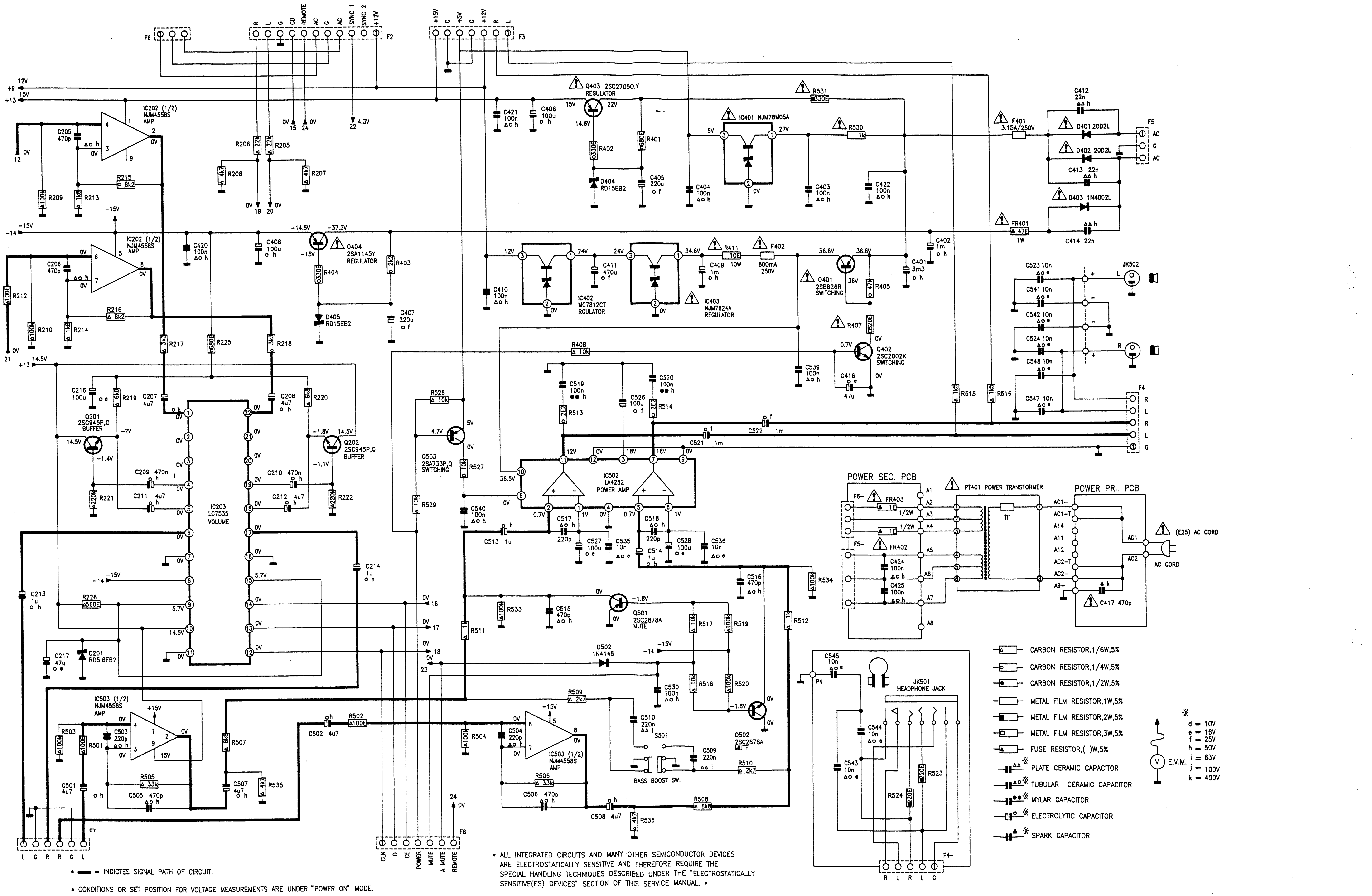
2SC2705O,Y



2SB826R



Main Schematic Diagram-Amplifier

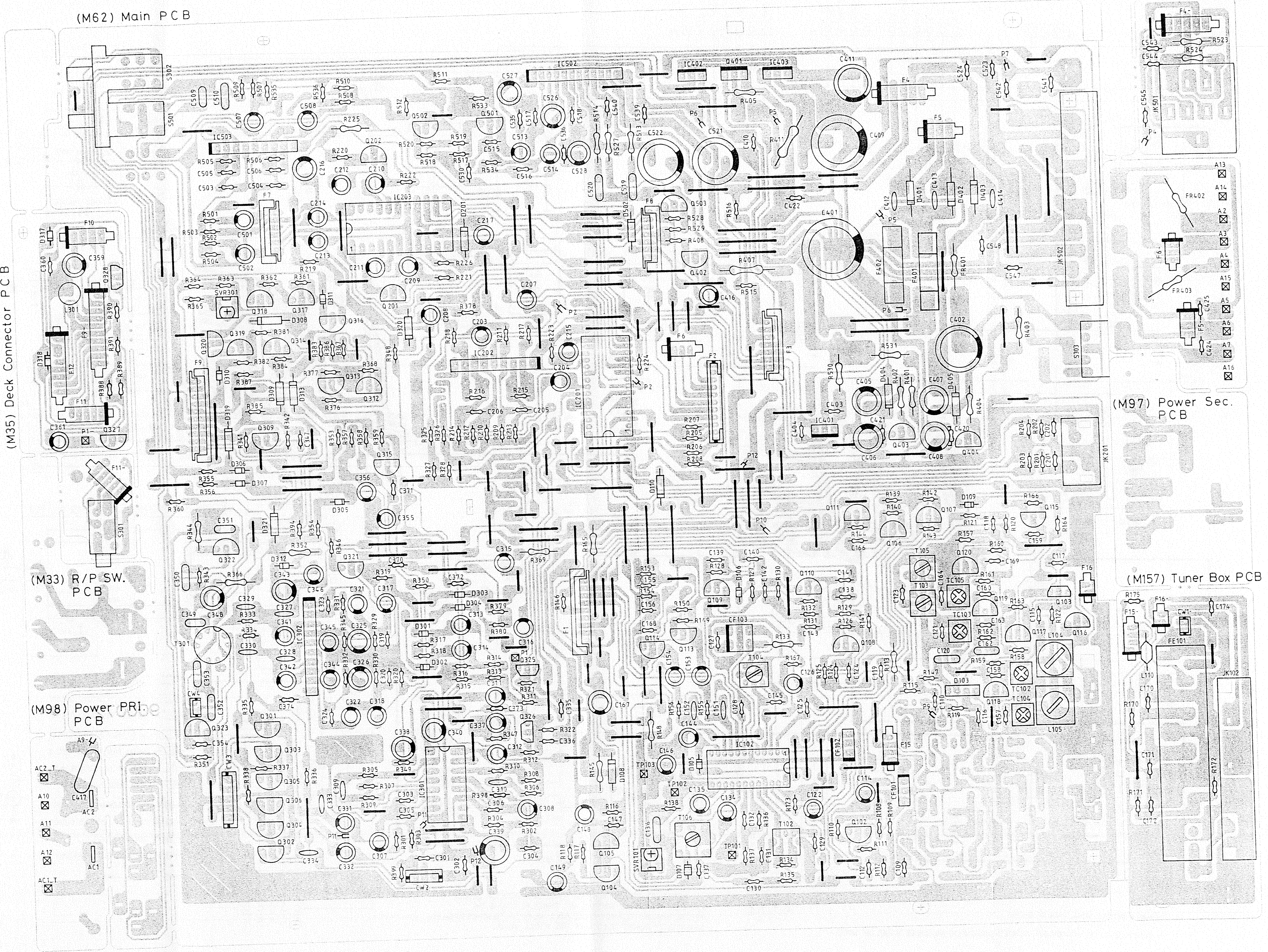

F6
F2
F3
R L G CD REMOTE AC G AC SYNC 1 SYNC 2 +12V
+15V G +5V G +12V R L
IC202 (1/2) NJM4558S AMP
IC202 (1/2) NJM4558S AMP
Q403 2SC27050,Y REGULATOR
Q404 2SA1145Y REGULATOR
IC401 NJM78M05A
IC402 MC7812CT RGULATOR
IC403 NJM7824A REGULATOR
Q401 2SB826R SWITCHING
Q402 2SC2002K SWITCHING
F401 3.15A/250V
D401 20D2L
D402 20D2L
D403 1N4002L
D404 RD15EB2
D405 RD15EB2
FR401 .47E 1W
F402 800mA 250V
R411 10E 10W
R531 .030E
R530 1k
C412 22n
C413 22n
C414 22n
F5 AC G AC
JK502
IC203 LC7535 VOLUME
Q201 2SC945P,Q BUFFER
Q202 2SC945P,Q BUFFER
IC502 LA4282 POWER AMP
Q503 2SA733P,Q SWITCHING
Q501 2SC2878A MUTE
Q502 2SC2878A MUTE
D502 1N4148
D201 RD5.6EB2
IC503 (1/2) NJM4558S AMP
IC503 (1/2) NJM4558S AMP
BASS BOOST SW.
S501
JK501 HEADPHONE JACK
P4
F4
F7
F8
L G R R G L
CLK DI CE POWER MUTE A MUTE REMOTE
POWER SEC. PCB
PT401 POWER TRANSFORMER
POWER PRI. PCB
FR403 1E
FR402 1E
1/2W
(E25) AC CORD
AC CORD
AC1 AC2
C417 470p
C424 100n
C425 100n
CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
CARBON RESISTOR,1/2W,5%
METAL FILM RESISTOR,1W,5%
METAL FILM RESISTOR,2W,5%
METAL FILM RESISTOR,3W,5%
FUSE RESISTOR,( )W,5%
PLATE CERAMIC CAPACITOR
TUBULAR CERAMIC CAPACITOR
MYLAR CAPACITOR
ELECTROLYTIC CAPACITOR
SPARK CAPACITOR
d = 10V
e = 16V
f = 25V
h = 50V
i = 63V
j = 100V
k = 400V
E.V.M.

* ▬ = INDICTES SIGNAL PATH OF CIRCUIT.

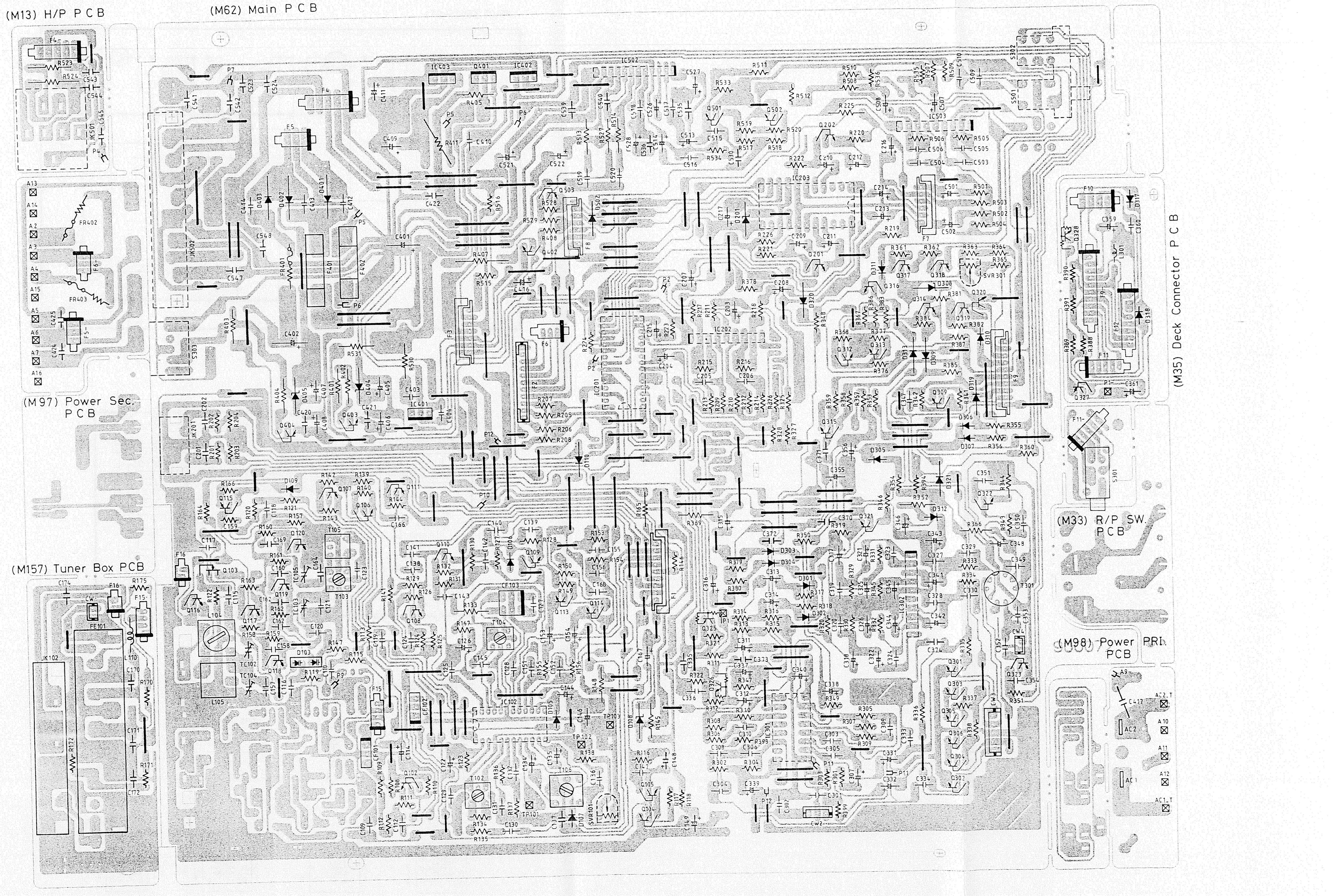
* CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

* ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL. *

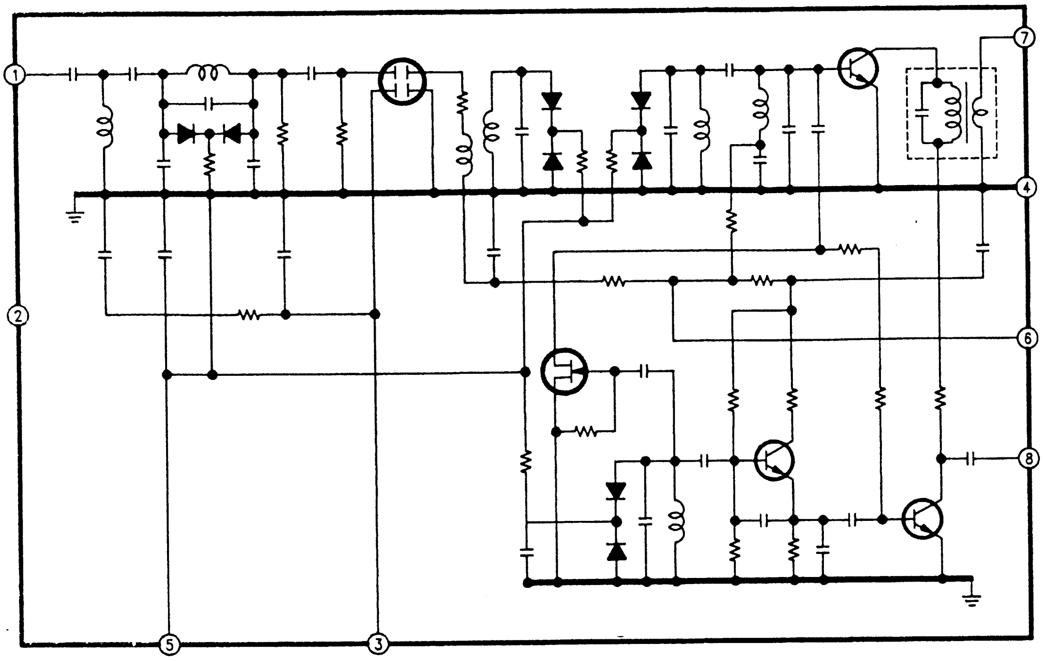
Main P C Board-Component Side


(M62) Main PCB
(M13) H/P PCB
(M35) Deck Connector PCB
(M33) R/P SW. PCB
(M98) Power PRI. PCB
(M97) Power Sec. PCB
(M157) Tuner Box PCB
IC502
IC402
Q401
IC403
IC503
IC203
IC202
IC201
IC401
IC302
IC301
IC102
JK501
JK502
JK201
JK102
FE101

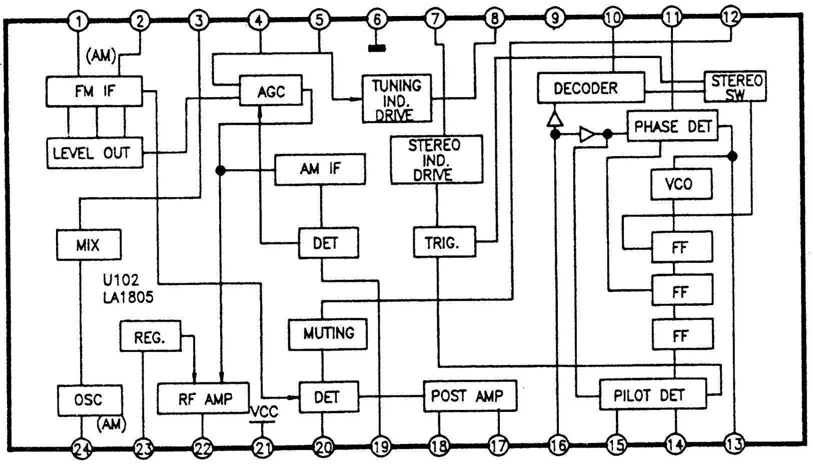
Main P C Board-Solder Side


(M13) H/P P C B
(M62) Main P C B
(M97) Power Sec. P C B
(M157) Tuner Box PCB
(M35) Deck Connector P C B
(M33) R/P SW. P C B
(M98) Power PRI. P C B

FE101 FE415-G11



IC102 LA1805



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⑦
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⑨
⑩
⑪
⑫
(AM)
FM IF
AGC
TUNING IND. DRIVE
DECODER
STEREO SW
PHASE DET
LEVEL OUT
AM IF
STEREO IND. DRIVE
VCO
MIX
DET
TRIG.
FF
U102
LA1805
FF
MUTING
REG.
FF
OSC
RF AMP
VCC
DET
POST AMP
PILOT DET
(AM)
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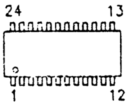
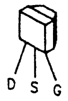
IC/TRANSISTORS/COILS CONNECTION:

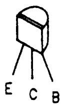
IC102 LA1805



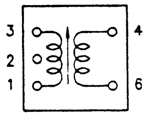
2SK192AY



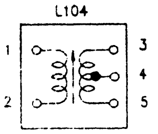
OTHER TRANSISTORS



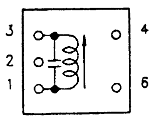
L105



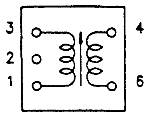
L104



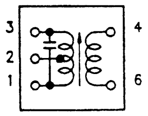
T102



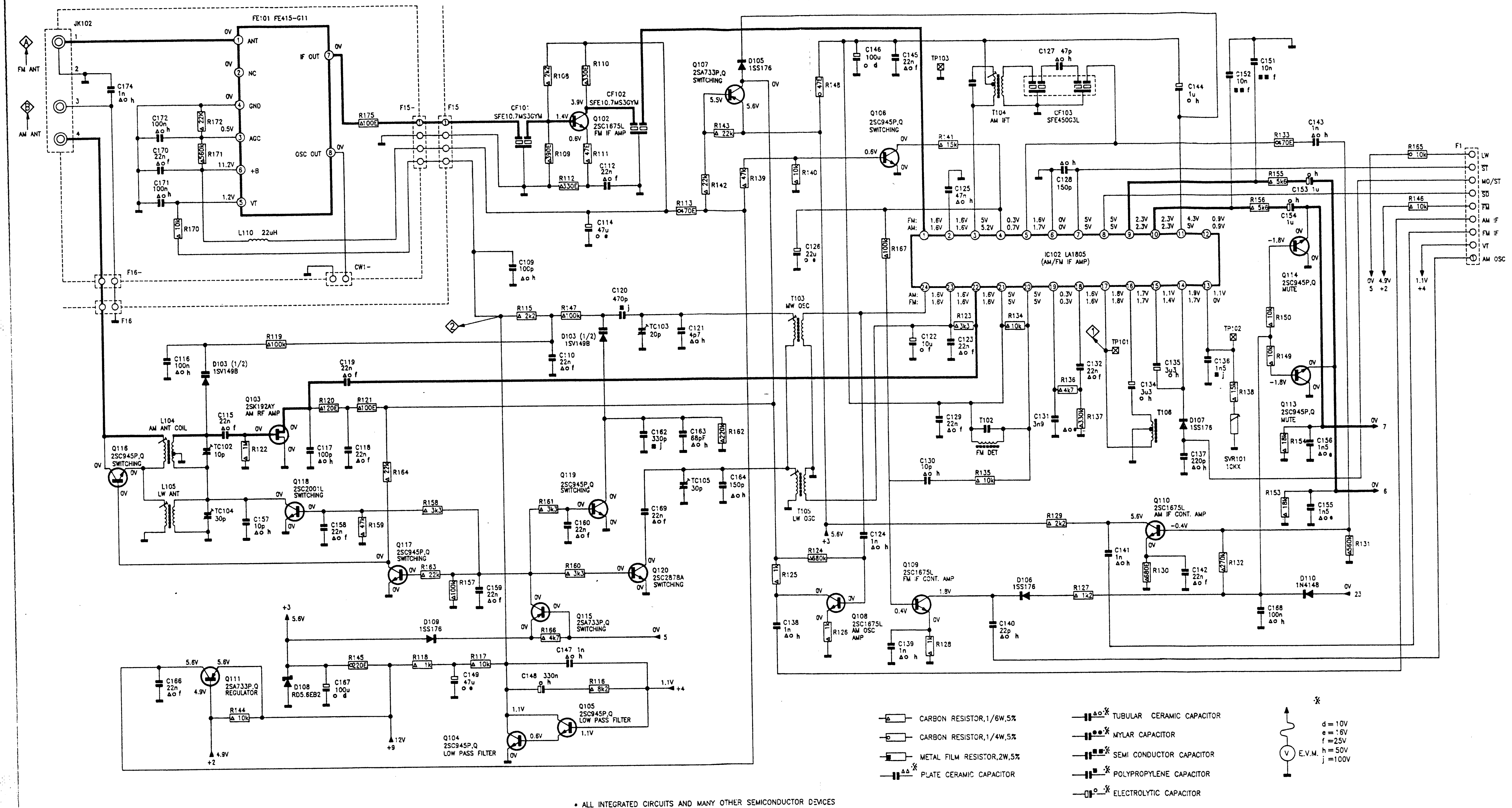
T103,T105



T104



Schematic Diagram-Tuner

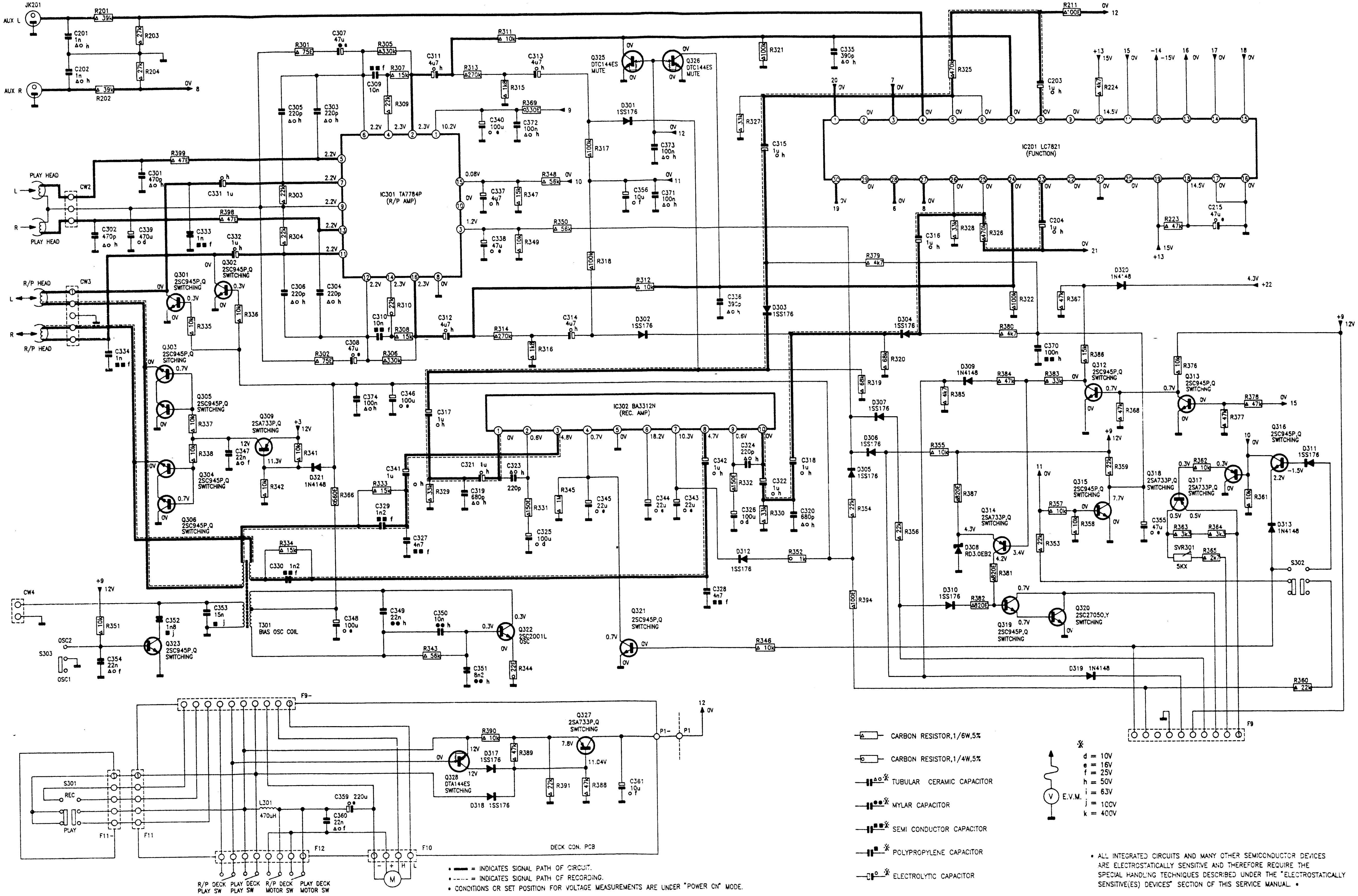

JK102
FM ANT
AM ANT
FE101 FE415-G11
ANT
NC
GND
AGC
+B
VT
IF OUT
OSC OUT
C174 1n
C172 100n
C170 22n
C171 100n
R172 22k
R171 560k
R170 10k
L110 22uH
F15-
F15
F16-
F16
CW1-
R175 100E
CF101 SFE10.7MS3GYM
CF102 SFE10.7MS3GYM
Q102 2SC1675L FM IF AMP
R108 2k2
R110 330E
R109 390E
R111 47
R112 330E
C112 22n
C114 47u
C109 10p
R113 470E
Q107 2SA733P,Q SWITCHING
D105 1SS176
R143 22k
R142 22k
R139 47k
R140 10k
Q106 2SC945P,Q SWITCHING
R141 15k
C146 100u
C145 22n
R148 47k
TP103
C125 47n
C126 22u
R167 100k
T104 AM IFT
C127 47p
CF103 SFE450G3L
C128 150p
C144 1u
C152 10n
C151 10n
C143 1n
R133 470E
R155 5k6
C153 1u
R156 5k6
C154 1u
R165 10k
R146 10k
F1
LW
ST
MO/ST
SD
FM
AM IF
FM IF
VT
AM OSC
IC102 LA1805 (AM/FM IF AMP)
Q114 2SC945P,Q MUTE
R150 10k
R149 10k
Q113 2SC945P,Q MUTE
R154 18k
C156 1n5
R153 18k
C155 1n5
R131 560k
TP102
C136 1n5
R138 15k
SVR101 10KX
R115 2k2
R147 100k
D103 (1/2) 1SV149B
C120 470p
TC103 20p
C121 4p7
T103 MW OSC
R123 3k3
R134 10k
C122 10u
C123 22n
TP101
C132 22n
C135 3u3
C134 3u3
R136 4k7
R137 330k
T108
D107 1SS176
C137 220p
C129 22n
T102 FM DET
C131 3n9
C130 10p
R135 10k
R119 100k
C116 100n
D103 (1/2) 1SV149B
C110 22n
C119 22n
Q103 2SK192AY AM RF AMP
R120 120E
R121 100E
L104 AM ANT COIL
C115 22n
TC102 10p
R122 1k
C117 100p
C118 22n
R164 22k
C162 330p
C163 68pF
R162 220k
TC105 30p
C164 150p
Q116 2SC945P,Q SWITCHING
L105 LW ANT
TC104 30p
C157 10p
Q118 2SC2001L SWITCHING
C158 22n
R159 47k
R158 3k3
Q119 2SC945P,Q SWITCHING
R161 3k3
C160 22n
C169 22n
T105 LW OSC
R124 680k
C124 1n
R125 1k
Q110 2SC1675L AM IF CONT. AMP
R129 2k2
C141 1n
R130 680k
C142 22n
R132 270k
Q117 2SC945P,Q SWITCHING
R163 22k
R157 100k
C159 22n
R160 3k3
Q120 2SC2878A SWITCHING
Q109 2SC1675L FM IF CONT. AMP
D106 1SS176
R127 1k2
D110 1N4148
C168 100n
Q115 2SA733P,Q SWITCHING
R166 4k7
D109 1SS176
Q108 2SC1675L AM OSC AMP
R126 1k
C138 1n
C139 1n
R128 1k
C140 22p
C147 1n
R145 220E
R118 1k
R117 10k
C149 47u
C148 330n
R116 8k2
Q111 2SA733P,Q REGULATOR
C166 22n
D108 RD5.6EB2
C167 100u
R144 10k
Q105 2SC945P,Q LOW PASS FILTER
Q104 2SC945P,Q LOW PASS FILTER
CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
METAL FILM RESISTOR,2W,5%
PLATE CERAMIC CAPACITOR
TUBULAR CERAMIC CAPACITOR
MYLAR CAPACITOR
SEMI CONDUCTOR CAPACITOR
POLYPROPYLENE CAPACITOR
ELECTROLYTIC CAPACITOR
E.V.M.
d=10V
e=16V
f=25V
h=50V
j=100V

▬ = INDICATES SIGNAL PATH OF CIRCUIT.

• CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

• ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL. •

Main Schematic Diagram-Cassette



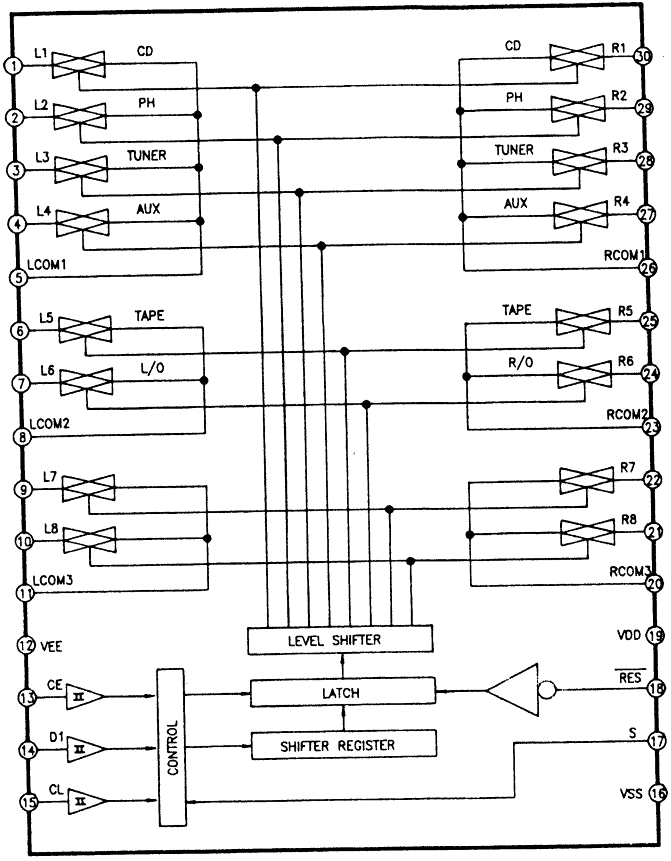
JK201
AUX L
AUX R
R201 39k
R202 39k
R203
R204
C201 1n
C202 1n
PLAY HEAD
R/P HEAD
CW2
CW3
CW4
R399 47E
R398 47E
C301 470p
C302 470p
C339 470u
C331 1u
C332 1u
C333 1n
C334 1n
R301 75E
C307 47u
R305 330k
R307 15k
C309 10n
R309 22k
C305 220p
C303 220p
C306 220p
C304 220p
R303 22k
R304 22k
IC301 TA7784P (R/P AMP)
C311 4u7
R313 270k
C313 4u7
R315 1k8
R311 10k
R369 330E
C340 100u
C372 100n
R348 56k
R347 15k
C337 4u7
R350 56k
C338 47u
R349 10k
C310 10n
R308 15k
R310 22k
C312 4u7
R314 270k
R316 1k8
C314 4u7
R302 75E
C308 47u
R306 330k
Q301 2SC945P,Q SWITCHING
Q302 2SC945P,Q SWITCHING
Q303 2SC945P,Q SITCHING
Q304 2SC945P,Q SWITCHING
Q305 2SC945P,Q SWITCHING
Q306 2SC945P,Q SWITCHING
R335 10k
R336 10k
R337 10k
R338 10k
Q309 2SA733P,Q SWITCHING
C347 22n
R341 10k
R342 10k
D321 1N4148
R366 560E
C374 100n
C346 100u
Q325 DTC144ES MUTE
Q326 DTC144ES MUTE
D301 1SS176
C373 100n
C356 10u
C371 100n
R317 100k
R318 100k
R312 10k
D302 1SS176
C336 390p
R321 100k
C335 390p
R327 33k
C315 1u
D303 1SS176
R325 470k
C203 1u
R211 100E
R224 4k7
IC201 LC7821 (FUNCTION)
R223 47k
C215 47u
C204 1u
C316 1u
R328 33k
R326 470k
R379 4k7
D304 1SS176
R322 100k
R367 47k
D320 1N4148
R380 4k7
C370 100n
R320 68k
R319 68k
IC302 BA3312N (REC. AMP)
C317 1u
C341 1u
R333 15k
C329 1n2
C327 4n7
C321 1u
C319 680p
C323 4u
R329 33k
R331 150E
C325 100u
R345 1M
C345 22u
C344 22u
C343 22u
C342 1u
C324 220p
R332 150E
C326 100u
C322 1u
R330 33k
C318 1u
C320 680p
C328 4n7
D312 1SS176
R352 1k
R334 15k
C330 1n2
T301 BIAS OSC COIL
C348 100u
C349 22n
C350 10n
R343 56k
Q322 2SC2001L OSC
R344 22k
C351 8n2
Q321 2SC945P,Q SWITCHING
R346 10k
R351 10k
C352 1n8
C353 15n
Q323 2SC945P,Q SWITCHING
C354 22n
OSC2
OSC1
S303
D309 1N4148
R384 47k
R383 33k
R385 4k7
R386 15k
Q312 2SC945P,Q SWITCHING
R368 47k
R376 10k
Q313 2SC945P,Q SWITCHING
R378 47k
R377 47k
D307 1SS176
D306 1SS176
D305 1SS176
R355 10k
R359 22k
R387 820E
Q315 2SC945P,Q SWITCHING
R357 10k
R358 10k
Q314 2SA733P,Q SWITCHING
D308 RD3.0EB2
R381 820E
R353 22k
R354 22k
R356 22k
R394 100E
Q318 2SA733P,Q SWITCHING
R362 10k
Q317 2SA733P,Q SWITCHING
C355 47u
R363 3k3
R364 3k3
SVR301 5KX
R365 2k7
R361 10k
Q316 2SC945P,Q SWITCHING
D311 1SS176
D313 1N4148
S302
D310 1SS176
R382 820E
Q319 2SC945P,Q SWITCHING
Q320 2SC2705O,Y SWITCHING
D319 1N4148
R360 22k
F9
F9-
F11
F11-
F12
F10
S301
REC
PLAY
L301 470uH
C359 220u
C360 22n
R390 10k
Q328 DTA144ES SWITCHING
D317 1SS176
D318 1SS176
R389 47k
Q327 2SA733P,Q SWITCHING
R391 22k
R388 47k
C361 10u
P1-
P1
DECK CON. PCB
R/P DECK PLAY SW
PLAY DECK PLAY SW
R/P DECK MOTOR SW
PLAY DECK MOTOR SW
M
CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
TUBULAR CERAMIC CAPACITOR
MYLAR CAPACITOR
SEMI CONDUCTOR CAPACITOR
POLYPROPYLENE CAPACITOR
ELECTROLYTIC CAPACITOR
E.V.M.
d = 10V
e = 16V
f = 25V
h = 50V
i = 63V
j = 100V
k = 400V

• ▬▬ = INDICATES SIGNAL PATH OF CIRCUIT.
• - - - - = INDICATES SIGNAL PATH OF RECORDING.
• CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

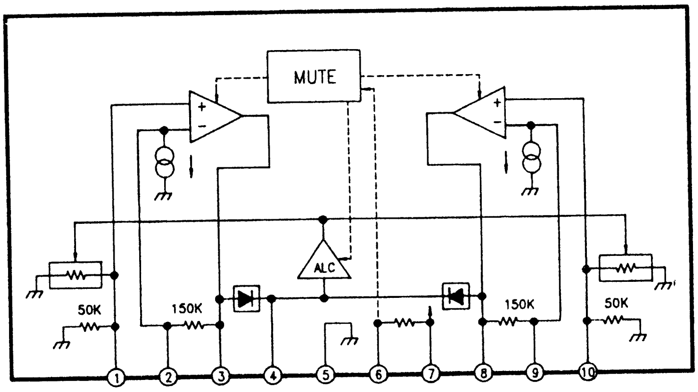
• ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL •

IC BLOCK

IC201 LC7821

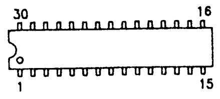

L1
CD
1
L2
PH
2
L3
TUNER
3
L4
AUX
4
LCOM1
5
L5
TAPE
6
L6
L/O
7
LCOM2
8
L7
9
L8
10
LCOM3
11
12 VEE
CE
13
D1
14
CL
15
CONTROL
LEVEL SHIFTER
LATCH
SHIFTER REGISTER
CD
R1
30
PH
R2
29
TUNER
R3
28
AUX
R4
27
RCOM1
26
TAPE
R5
25
R/O
R6
24
RCOM2
23
R7
22
R8
21
RCOM3
20
VDD
19
RES
18
S
17
VSS
16

IC302 BA3312N

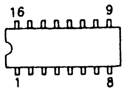

MUTE
ALC
50K
150K
150K
50K
1
2
3
4
5
6
7
8
9
10

IC/TRANSISTORS CONNECTION:

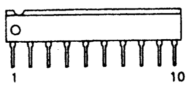
IC201 LC7821



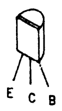
IC301 TA7784P



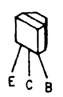
IC302 BA3312N



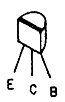
2SC2705O,Y



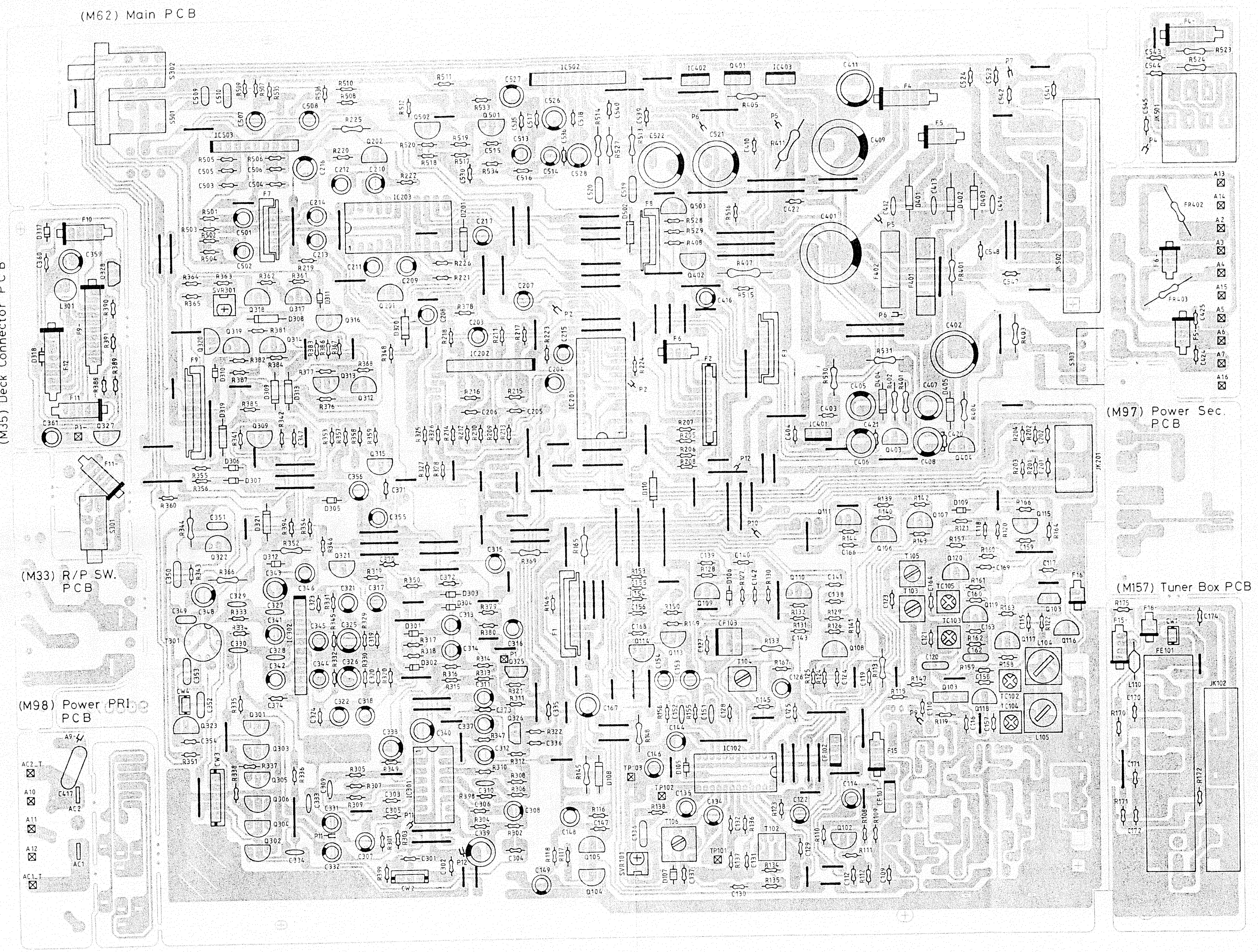
DTA144ES
DTC144ES



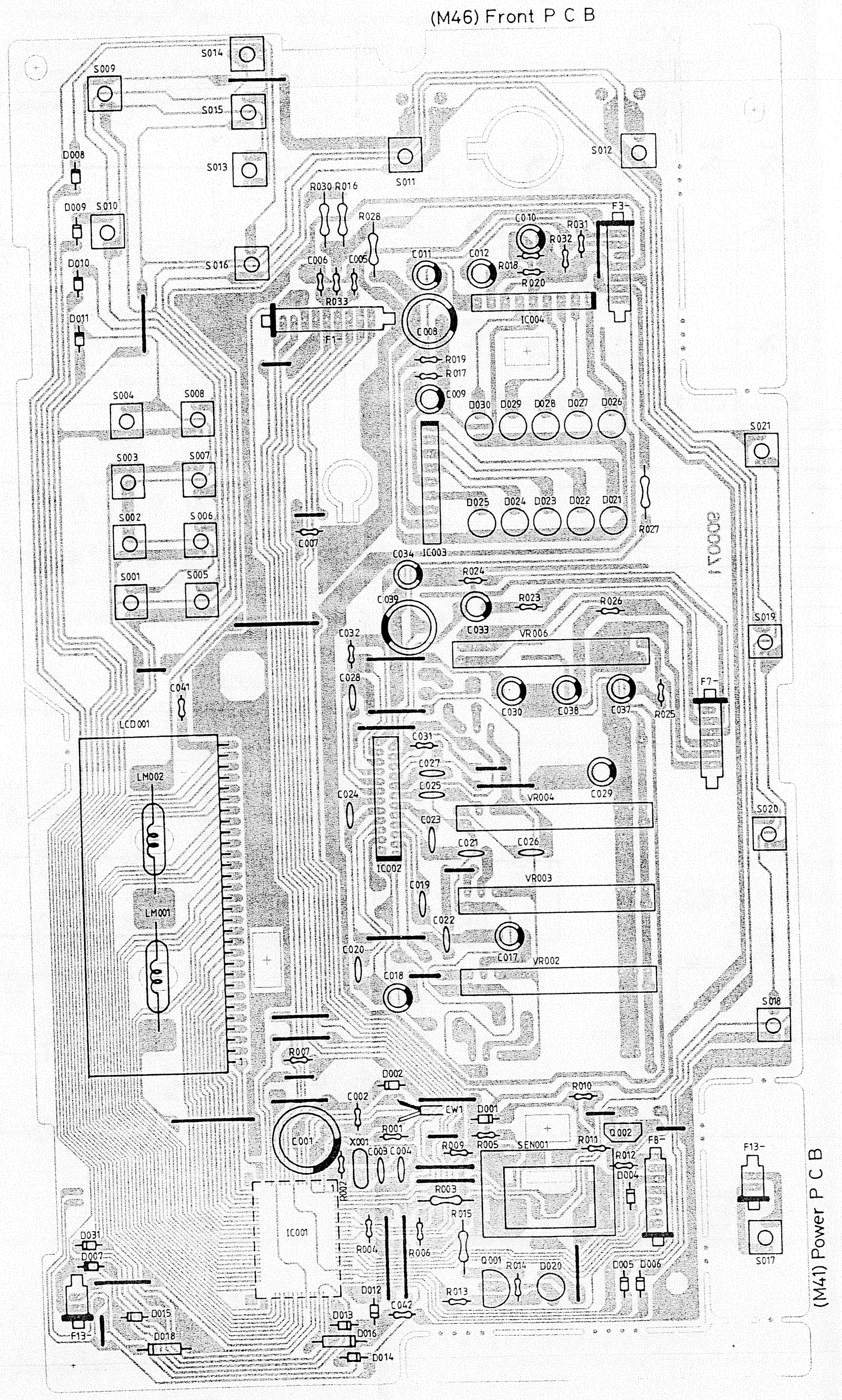
OTHER TRANSISTORS

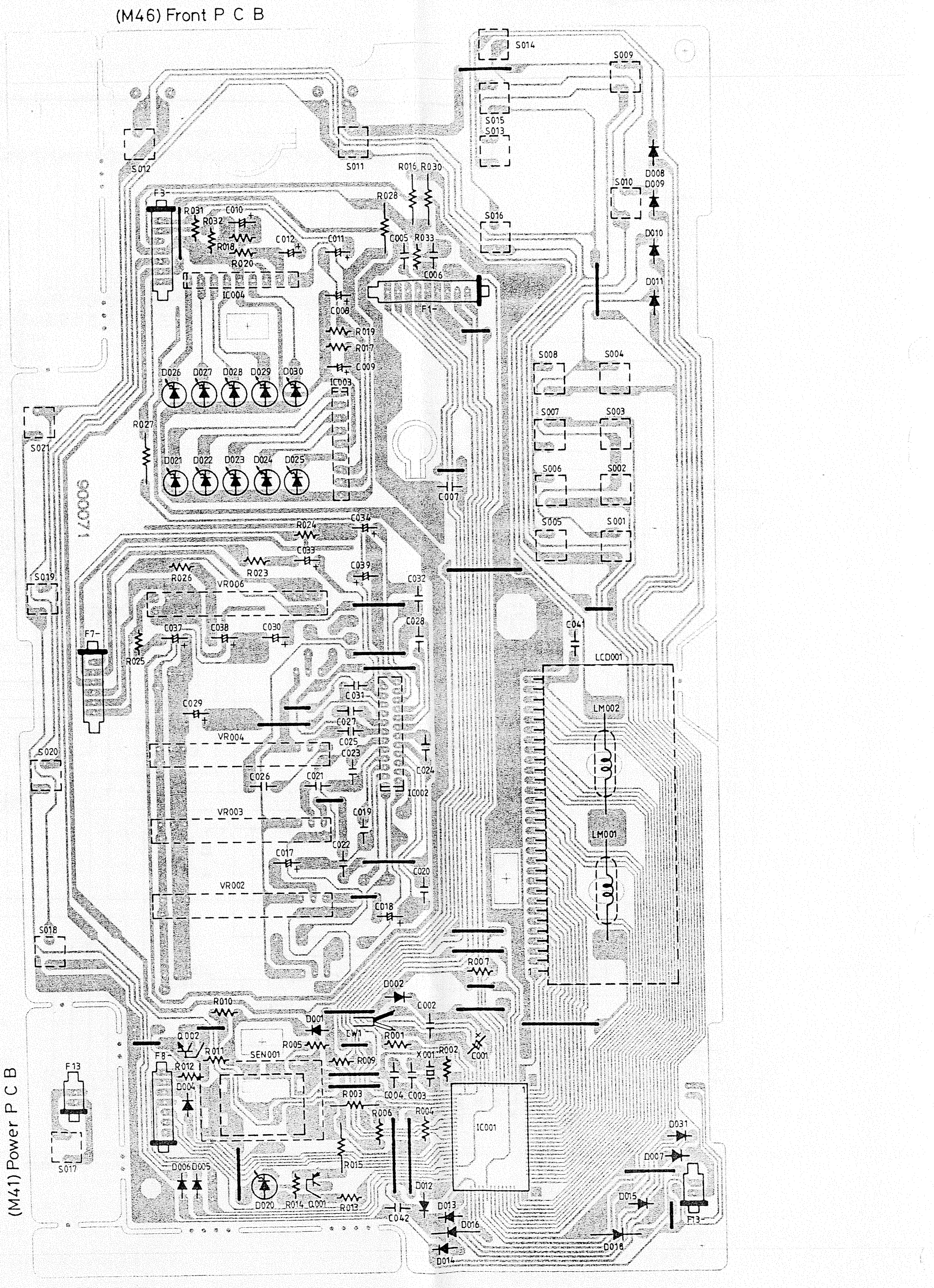


Main P C Board-Component Side

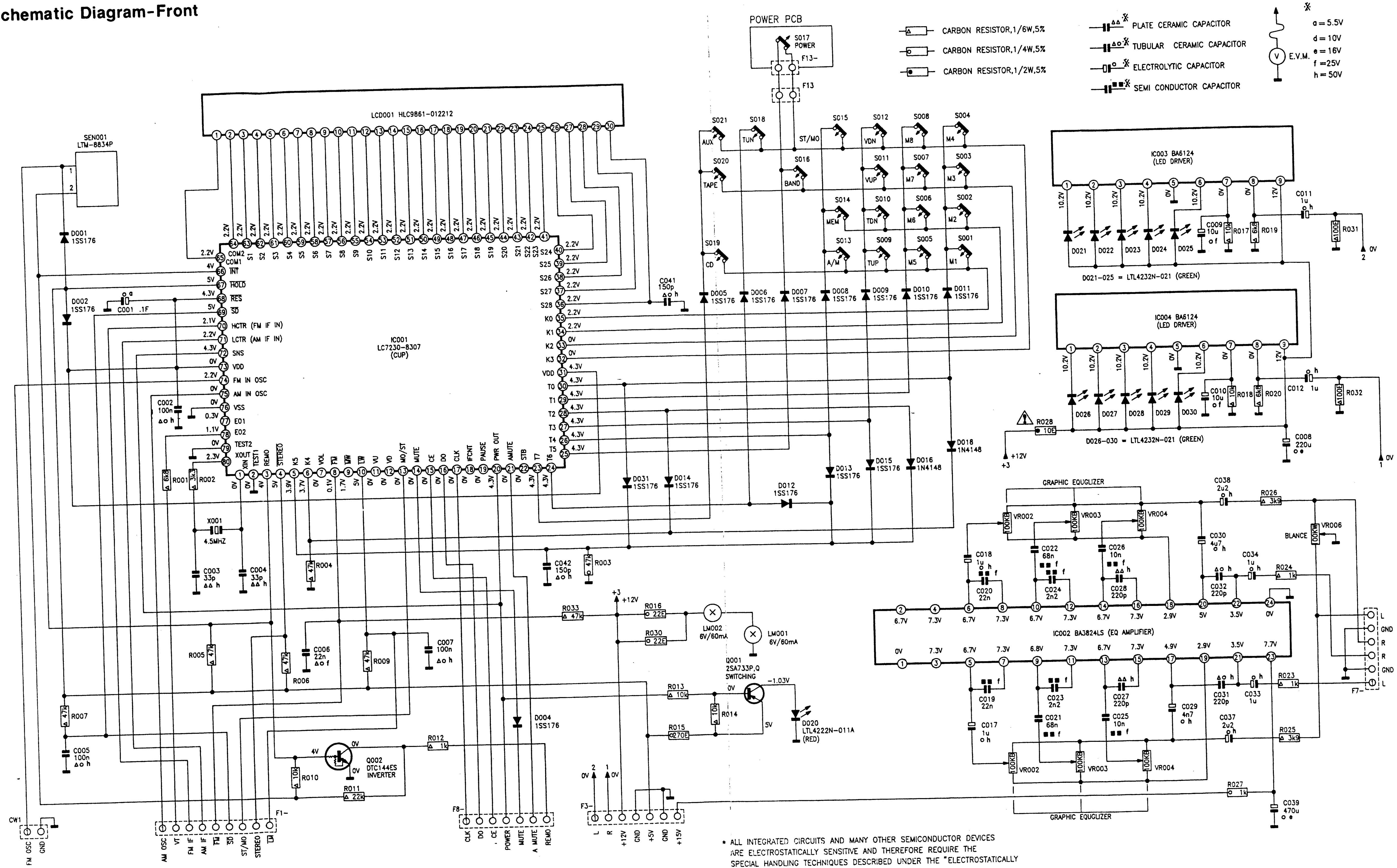

(M62) Main PCB
(M13) H/P PCB
(M35) Deck Connector PCB
(M33) R/P SW. PCB
(M98) Power PRI. PCB
(M97) Power Sec. PCB
(M157) Tuner Box PCB
IC502
IC402
Q401
IC403
IC503
IC203
IC202
IC201
IC401
IC301
IC302
IC102
JK501
JK502
JK201
JK102
S301
S302
S303
S501
FE101
T301
SVR301
SVR101
FR401
FR402
FR403
A13
A14
A2
A3
A4
A15
A5
A6
A7
A16
A9
A10
A11
A12
AC2_T
AC1_T
AC1
AC2

Front P C Board-Component Side and Solder Side


(M46) Front P C B
(M41) Power P C B
LCD001
LM001
LM002
IC001
IC002
IC003
IC004
SEN001
CW1
X001
VR002
VR003
VR004
VR006
F1
F3
F7
F8
F13
S001
S002
S003
S004
S005
S006
S007
S008
S009
S010
S011
S012
S013
S014
S015
S016
S017
S018
S019
S020
S021
900071


(M46) Front P C B
(M41) Power P C B
LCD001
LM001
LM002
IC001
IC002
IC003
IC004
SEN001
CW1
X001
VR002
VR003
VR004
VR006
F1
F3
F7
F8
F13
S001
S002
S003
S004
S005
S006
S007
S008
S009
S010
S011
S012
S013
S014
S015
S016
S017
S018
S019
S020
S021
900071

Schematic Diagram-Front

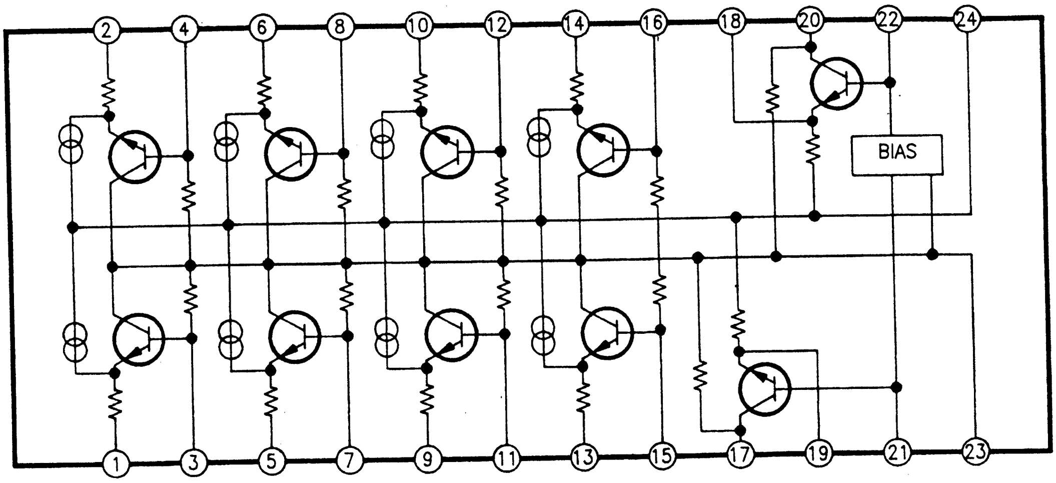

POWER PCB
S017 POWER
F13
CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
CARBON RESISTOR,1/2W,5%
PLATE CERAMIC CAPACITOR
TUBULAR CERAMIC CAPACITOR
ELECTROLYTIC CAPACITOR
SEMI CONDUCTOR CAPACITOR
E.V.M.
a = 5.5V
d = 10V
e = 16V
f = 25V
h = 50V
LCD001 HLC9861-012212
SEN001 LTM-8834P
D001 1SS176
D002 1SS176
C001 .1F
IC001 LC7230-8307 (CUP)
COM2
COM1
INT
HOLD
RES
SD
HCTR (FM IF IN)
LCTR (AM IF IN)
SNS
VDD
FM IN OSC
AM IN OSC
VSS
EO1
EO2
TEST2
XOUT
XIN
TEST1
REMO
STEREO
K5
K4
VOL
FM
MW
LW
VU
VD
MO/ST
MUTE
CE
DO
CLK
IFCNT
PAUSE
PWR OUT
AMUTE
STB
T7
T6
S24
S25
S26
S27
S28
K0
K1
K2
K3
T0
T1
T2
T3
T4
T5
C041 150p
C002 100n
R001 6k8
R002 3k3
X001 4.5MHZ
C003 33p
C004 33p
R004 47k
C042 150p
R003 47k
S021 AUX
S018 TUN
ST/MO
S016 BAND
S020 TAPE
S019 CD
S015
S014 MEM
S013 A/M
S012 VDN
S011 VUP
S010 TDN
S009 TUP
S008 M8
S007 M7
S006 M6
S005 M5
S004 M4
S003 M3
S002 M2
S001 M1
D005 1SS176
D006 1SS176
D007 1SS176
D008 1SS176
D009 1SS176
D010 1SS176
D011 1SS176
D031 1SS176
D014 1SS176
D012 1SS176
D013 1SS176
D015 1SS176
D016 1N4148
D018 1N4148
IC003 BA6124 (LED DRIVER)
D021
D022
D023
D024
D025
C009 10u
R017 10k
R019 6k8
C011 1u
R031 100E
D021-025 = LTL4232N-021 (GREEN)
IC004 BA6124 (LED DRIVER)
D026
D027
D028
D029
D030
C010 10u
R018 10k
R020 6k8
C012 1u
R032 100E
R028 10E
+12V
+3
D026-030 = LTL4232N-021 (GREEN)
C008 220u
0V
GRAPHIC EQUGLIZER
VR002
VR003
VR004
VR006
BLANCE
C038 2u2
R026 3k9
C030 4u7
C034 1u
R024 1k
C032 220p
C018 1u
C020 22n
C022 68n
C024 2n2
C026 10n
C028 220p
IC002 BA3824LS (EQ AMPLIFIER)
C019 22n
C017 1u
C023 2n2
C021 68n
C027 220p
C025 10n
C029 4n7
C031 220p
C033 1u
C037 2u2
R023 1k
R025 3k9
R027 1k
C039 470u
F7
L
GND
R
R
GND
L
R005 47k
R006 47k
C006 22n
R009 47k
C007 100n
R033 47k
R016 22E
R030 22E
LM002 6V/60mA
LM001 6V/60mA
Q001 2SA733P,Q SWITCHING
R013 10k
R014 10k
R015 270E
D020 LTL4222N-011A (RED)
D004 1SS176
R007 47k
C005 100n
Q002 DTC144ES INVERTER
R010 10k
R011 22k
R012 1k
CW1
FM OSC
GND
F1
AM OSC
VT
FM IF
AM IF
FM
SD
ST/MO
STEREO
LW
F8
CLK
DO
CE
POWER
MUTE
A MUTE
REMO
F3
L
R
+12V
GND
+5V
GND
+15V
2 0V
1 0V

• ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL. •

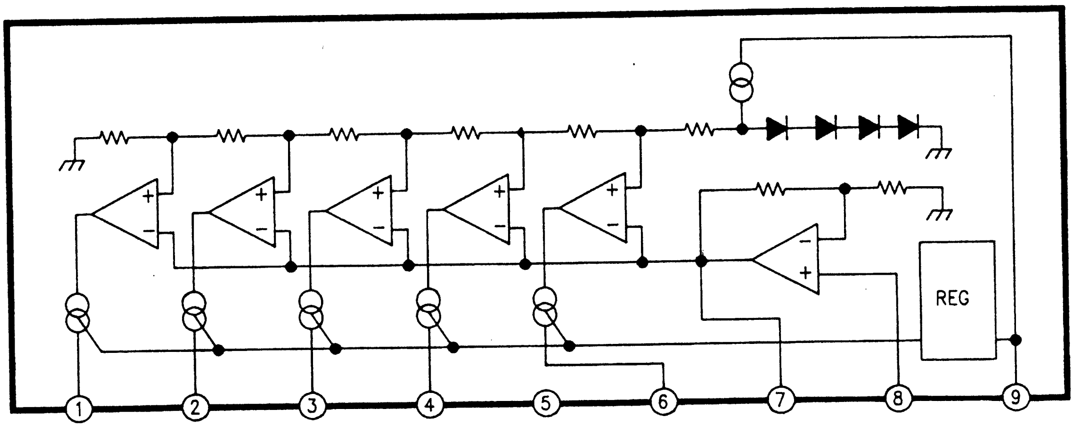
• CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

IC BLOCK (FRONT)

IC002 BA3824LS

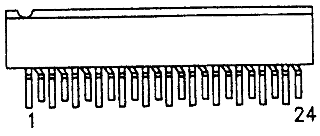

2
4
6
8
10
12
14
16
18
20
22
24
BIAS
1
3
5
7
9
11
13
15
17
19
21
23

IC003,004 BA6124

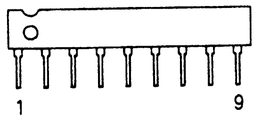

REG
1
2
3
4
5
6
7
8
9

IC/TPANSISTORS CONNECTION:

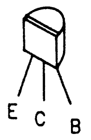
IC002 BA3824LS



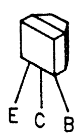
IC003,IC004 BA6124



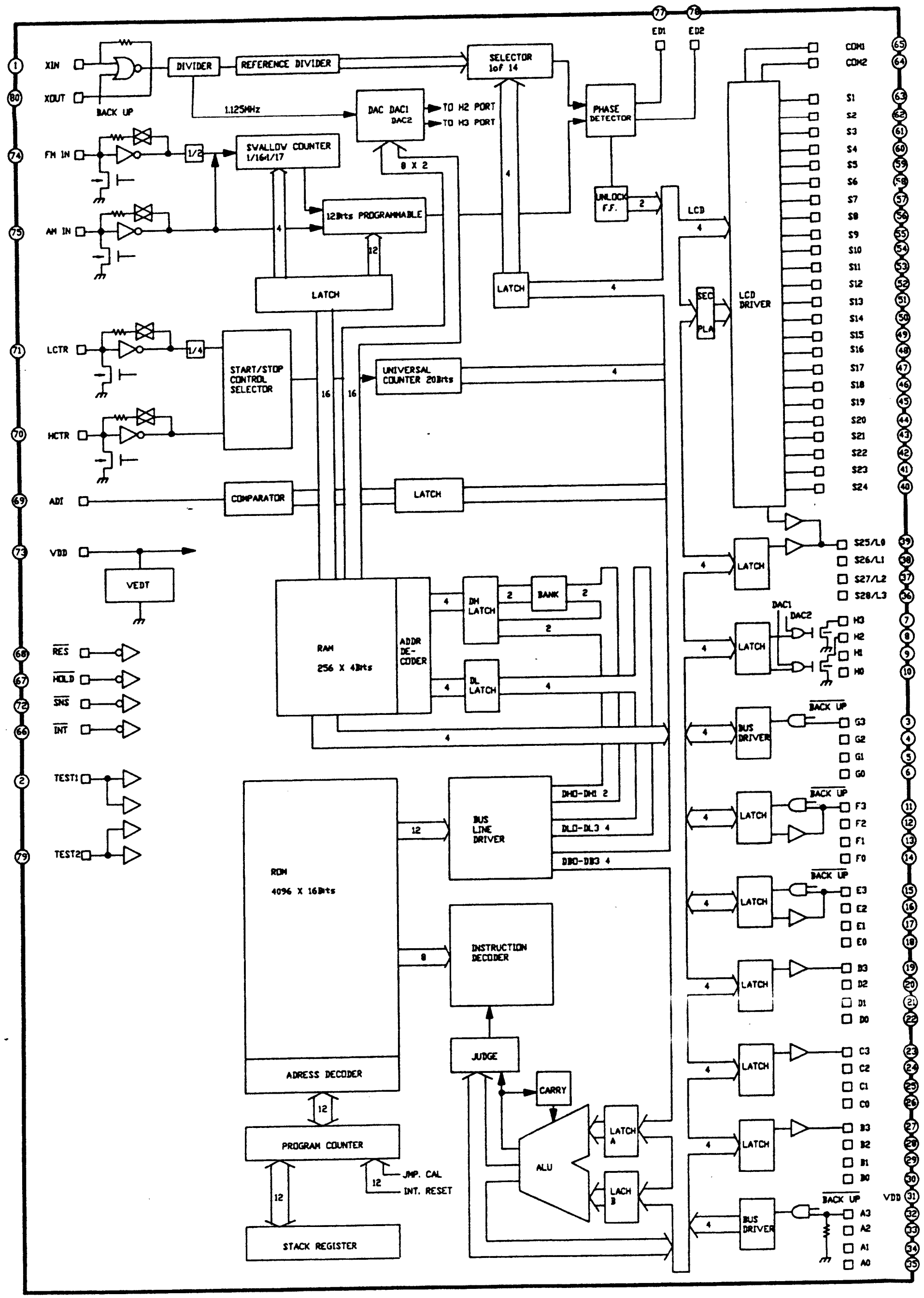
Q001 2SA733P,Q



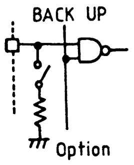
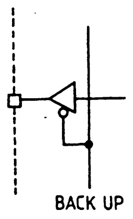
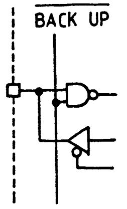
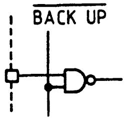
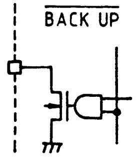
Q002 DTC144ES



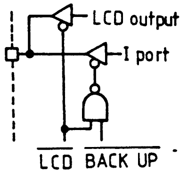
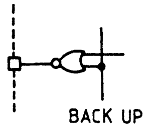
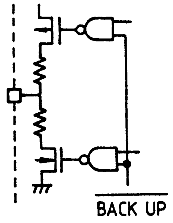
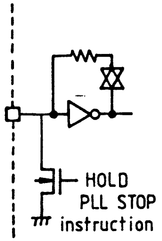
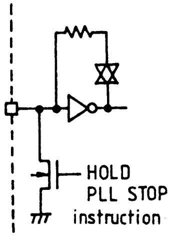
IC001 Block Diagram


XIN
XOUT
BACK UP
DIVIDER
REFERENCE DIVIDER
SELECTOR 1of 14
1.125MHz
DAC DAC1 DAC2
TO H2 PORT
TO H3 PORT
PHASE DETECTOR
ED1
ED2
FM IN
AM IN
1/2
SVALLOW COUNTER 1/164/17
8 X 2
12Bits PROGRAMMABLE
12
4
UNLOCK F.F.
2
LCD
LATCH
SEC
PLA
LCD DRIVER
COM1
COM2
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25/L0
S26/L1
S27/L2
S28/L3
LCTR
HCTR
1/4
START/STOP CONTROL SELECTOR
16
UNIVERSAL COUNTER 20Bits
ADI
COMPARATOR
VDD
VEDT
RES
HOLD
SNS
INT
TEST1
TEST2
RAM 256 X 4Bits
ADDR DE-CODER
DH LATCH
BANK
DL LATCH
DAC1
DAC2
H3
H2
H1
H0
BACK UP
BUS DRIVER
G3
G2
G1
G0
ROM 4096 X 16Bits
BUS LINE DRIVER
DH0-DH1 2
DL0-DL3 4
DB0-DB3 4
F3
F2
F1
F0
E3
E2
E1
E0
INSTRUCTION DECODER
8
D3
D2
D1
D0
JUDGE
CARRY
C3
C2
C1
C0
ADRESS DECODER
ALU
LATCH A
LACH B
B3
B2
B1
B0
PROGRAM COUNTER
JMP. CAL
INT. RESET
STACK REGISTER
A3
A2
A1
A0

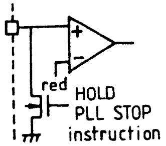
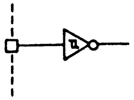
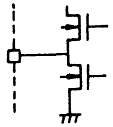
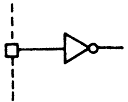
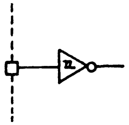
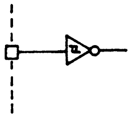
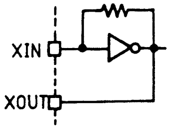
FUNCTIONAL EXPLANATION OF SYNTHESIZER IC001 TERMINALS

Pin Name	Pin No.	Functional Description	I/O	I/O Circuit Type
PA_0 PA_1 PA_2 PA_3	35 34 33 32	Used exclusively for data input. Low threshold type. These port pins can be used for key data entry. Pull-down resistance can be selected by the user option. In this selection, all four port pins are controlled at one time. That is, the pull-down resistor cannot be selected for each port pin individually. Input to the port pins is inhibited during the BACKUP mode ON.	Input	 BACK UP Option
PB_0 PB_1 PB_2 PB_3 PC_0 PC_1 PC_2 PC_3	30 29 28 27 26 25 24 23	Used exclusively for data output. Can be used for key scan timing signal output because these ports are composed of CMOS transistors with unbalanced impedance. Enter into output high impedance state at the BACKUP mode. Placed in "L" level state at the reset ($\overline{RES}$ = "L").	Output	
PD_0 PD_1 PD_2 PD_3	22 21 20 19	Used exclusively for data output. Normally CMOS output type. Enter into output high impedance state at the BACKUP mode. Placed in the "L" level state at the reset ($\overline{RES}$ = "L").		
PE_0 PE_1 PE_2 PE_3	18 17 16 15	Used for data input and output. The port is set to the input mode once the input instruction (IN, TPT, or TPF) is executed in the application program while set to the output mode if the output instruction (OUT, SPB, RPB) is used. The operation mode, once selected by such an instruction, can be effective until an instruction of different type is used in application program. Set to the input mode at the reset ($\overline{RES}$ = "L"). Set to the input mode at the BACKUP mode. In this case, note that data input to this port is inhibited.	Input/ Output	 $\overline{\text{BACK UP}}$
PF_0 PF_1 PF_2 PF_3	14 13 12 11	Used for data input and output. This port is controlled by the FPC instruction. Each port pin can be set to the input mode or the output mode by that instruction. Set to the input mode at the reset ($\overline{RES}$ = "L"). This port is set to the input mode at the BACKUP mode. In this case, note that data input to this port is inhibited.		
PG_0 PG_1 PG_2 PG_3	6 5 4 3	Used exclusively for data input Data input to the port is inhibited at the BACKUP mode.	Input	 $\overline{\text{BACK UP}}$
PH_0 PH_1 PH_2 PH_3	10 9 8 7	Used exclusively for data output. This port can be used for frequency band power source selection because this port has Nch open drain output circuitry at a high withstand voltage level. Port pins H_2 and H_3 can be also used as the DAC_1 and DAC_2 outputs, respectively. Enter into high impedance state at the reset ($\overline{RES}$ = "L") and the BACKUP mode.	Output	 $\overline{\text{BACK UP}}$

FUNCTIONAL EXPLANATION OF SYNTHESIZER IC001 TERMINALS (Continued)

Pin Name	Pin No.	Functional Description	I/O	I/O Circuit Type
PI_0/S25 PI_1/S26 PI_2/S27 PI_3/S28	39 38 37 36	Used exclusively for data output. This port has CMOS type output circuitry and can be selected as LCD driver output ports. The port operation mode can be selected by the SS or RS instruction. The output mode cannot be selected by such an instruction in bit units. This port is set to the LCD driver output mode at the reset ($\overline{RES}$ = "L") and at the power supply. In this case, the segment display is forced into the OFF state. This port is fixed to the "L" level at the BACKUP mode.	Output	
S1 to S24	63 to 40	Used for driving segments. That is, these ports are used as the LCD output drivers. The frame frequency for segment output is 100 Hz. The lighting format is 1/2 duty and 1/2 bias. The segment display is forced into the OFF state at the reset ($\overline{RES}$ = "L") and power supply. This port is set to the "L" level at the BACKUP mode.	Output	
COM 1 COM 2	65 64	Used for LCD drive common signal output. The lighting format is 1/2 duty and 1/2 bias. Normal output at the reset ($\overline{RES}$ = "L") and power supply. These ports are set to the "L" level at the BACKUP mode.	Output	
FM IN	74	Used for FM VCO input (local oscillation). Note that the VCO means Voltage-Controlled Oscillation. Input through capacitor coupling is required. The input frequency range is between 10 MHz and 130 MHz.	Input	
AM IN	75	Used for AM VCO input (local oscillation). Note that the VCO means Voltage-Controlled Oscillation. Input through capacitor coupling is required. Frequency bands can be selected by CW1 of the PLL instruction. Hi (2 to 40 MHz) → SW Lo (0.5 to 10 MHz) → LW, AM		
HCTR	70	Used for universal counter input. Input through capacitor coupling is required. The input frequency range is between 0.4 MHz and 12 MHz. This port can be used for counting FM IF and AM IF.	Input	
LCTR	71	Used for universal counter input. Input through capacitor coupling is required when the input frequency range is between 100 kHz and 500 kHz. Input through capacitor coupling is not required when the input frequency range is between 1 Hz and 20 kHz. This port can be used for counting AM IF.		

FUNCTIONAL EXPLANATION OF SYNTHESIZER IC001 TERMINALS (Continued)

Pin Name	Pin No.	Functional Description	I/O	I/O Circuit Type
ADI	69	Used for AD converter input. The AD converter is composed of a 6-bit sequential comparator requiring a conversion time of 1.28 milliseconds. Full-scale data (3FH): VDD x 63/96.	Input	
INT	66	Used for interrupt request signal input. Interrupt request becomes active if falling signal edge is detected at the port with the INTEN flag already set. Note that this flag is set by the SS instruction..	Input	
EO₁ EO₂	77 78	Used for phase comparison error output. Note that the reference signal frequency and programmable divider output signal frequency are compared in their phase On-chip charge pump available. The EO₁ and the EO₂ have the same circuit type.	Output	
SNS	72	Used at the BACKUP mode for power failure signal input. This port can be used as a normal input port.	Input	
HOLD	67	Used for HOLD mode request signal input. The HOLD mode becomes active if the HOLD pin logic changes to "L" with the HOLDEN flag already ON. Note that this flag is set by the SS instruction. The withstand voltage level of this port is "high" in order that the port can be used together with a power switch.	Input	
RES	68	Used for the system reset request input. The power up "L" level reset request signal must be applied to this port for more than 75 milliseconds. The reset "L" level start request signal must be applied to this port for more than five fundamental clock cycles.	Input	
XIN XOUT	1 80	These two pins are used for X'tal oscillation frequency (4.5 MHz) input and output. On-Chip feedback resistor available.	Input/ output	
TEST 1 TEST 2	2 79	These two pins are used for LST test signal input. They should be open-circuited or connected with the VSS pin.		
VDD VSS	31,73 76	Power source.		

INSTRUCTION FOR LC7230 SINGLE CHIP CONTROLLER

INSTRUCTION TYPE	MNEMONIC	OPERAND		FUNCTION DESCRIPTION
		1ST	2ND	
Status Register Instruction	SS	N		Set Status Register
	RS	N		Reset Status Register
Input/Output Instruction	OUT	M	P	Output Contents of M to Port
	SPB	P	N	Set Port Bits
	RPB	P	N	Reset Port Bits
Other Instruction	FPC	N		F Port I/O Control
	DAC	I		Load M to D/A Registers

CD Electrical Adjustment

The following steps should performed before adjustment procedure.

a. Remove the turntable by sliding the guide plate outward. (See Fig. 19)
b. Disassemble the base cover by removing 2 screws. (See Fig. 19)

CAUTION:

Laser beam may always active when the turntable removed.
Use of controls for adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
The compact disc player should not be adjusted or repaired by anyone except properly qualified service personnel.

1. VCO Adjustment

a. Connect CN007 to power supply, place SBC426A (Test disc 5A) on the spindle and fastened with the magnetic holder. (See Fig. 19)
b. Power ON & CD ON, push S006 switch in stop mode.
c. VCO test pin to CN014, and adjust VR005 for a counter reading of 4.45MHz +/– 30KHz. (See Fig. 20 & Fig. 24)
d. Disconnect the test pin after above procedure.

2. RF Adjustment

a. RF test pin connected to CN014, CD in play mode. (See Fig. 21)
b. Adjust VR002, for the maximum of the waveform. (See Fig. 22 & Fig. 24)

3. Track OFF Set Adjustment

a. Track OFF set test pin connected to CN008. (See Fig. 21)
b. Adjust VR001, let the waveform shown as A1=A2. (See Fig. 23 & Fig. 24)

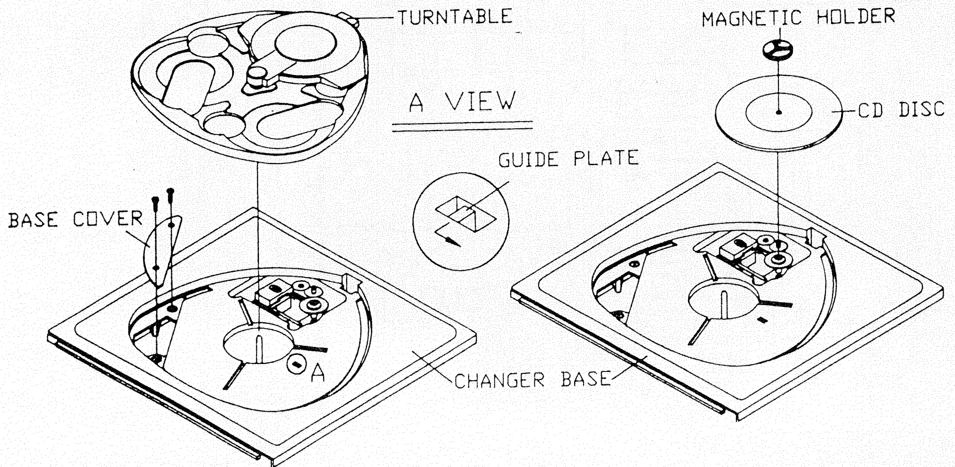
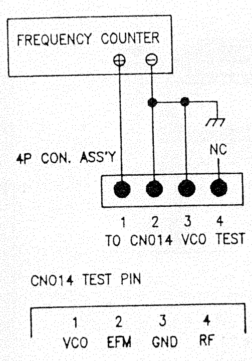

TURNTABLE
MAGNETIC HOLDER
A VIEW
CD DISC
GUIDE PLATE
BASE COVER
A
CHANGER BASE

Figure 19

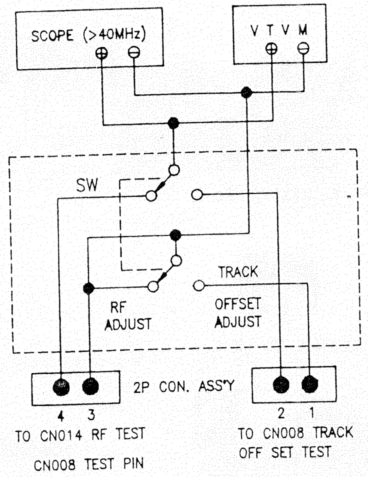

FREQUENCY COUNTER
⊕ ⊖
4P CON. ASS'Y
NC
1 2 3 4
TO CN014 VCO TEST

CN014 TEST PIN

1	2	3	4
VCO	EFM	GND	RF

NOTE: VCO TEST EFM TO GND.
TRACK OFF SET TEST
CN008 PIN2 TO GND.

Figure 20


SCOPE (>40MHz)
⊕ ⊖
V T V M
⊕ ⊖
SW
TRACK
RF ADJUST
OFFSET ADJUST
2P CON. ASS'Y
4 3
TO CN014 RF TEST
2 1
TO CN008 TRACK OFF SET TEST

CN008 TEST PIN

1	2

TRACK OFF SET TEST PIN

Figure 21

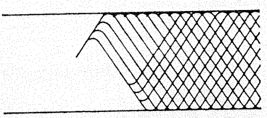


Figure 22

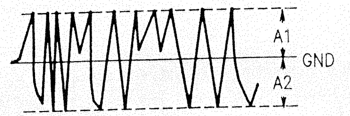


Figure 23

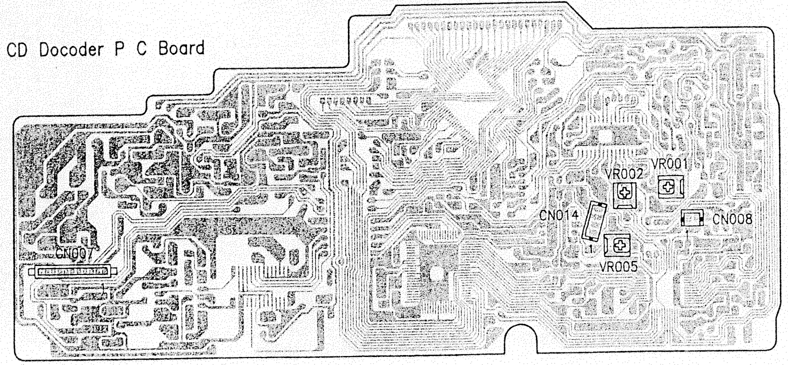
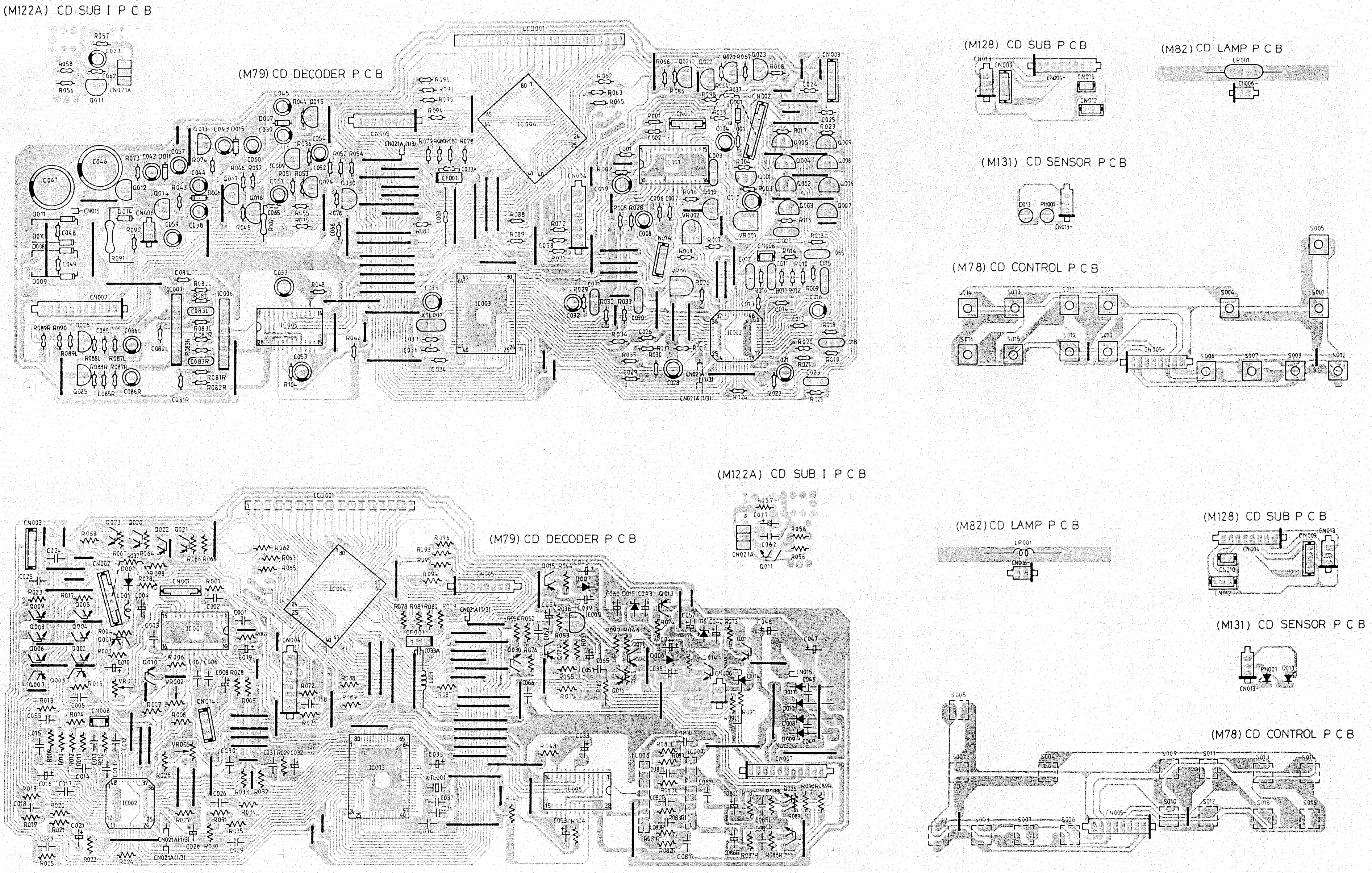

CD Docoder P C Board
VR002
VR001
CN014
CN008
VR005
CN007

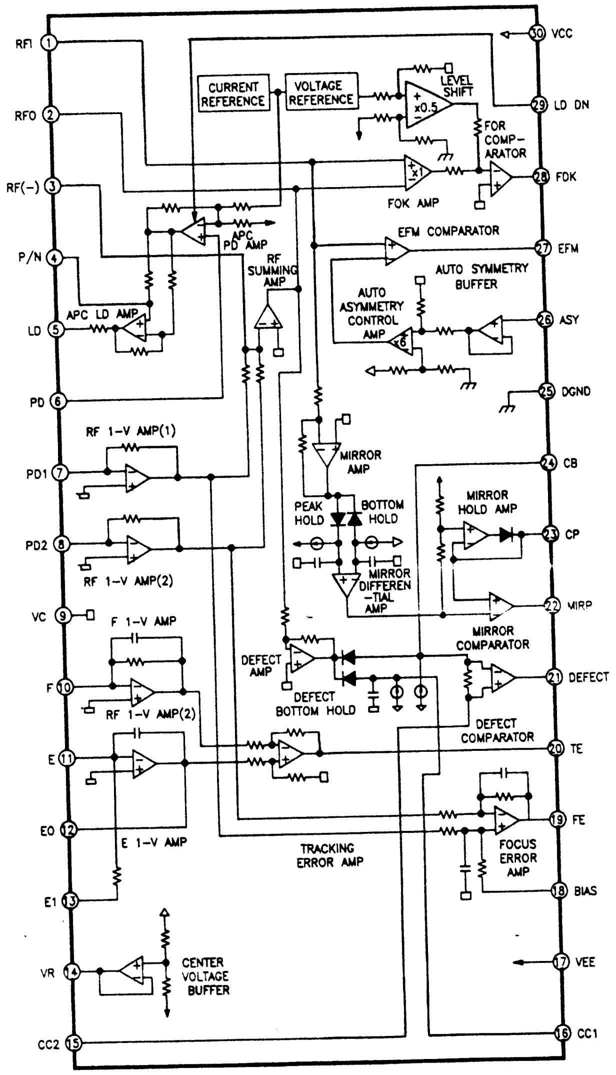
Figure 24

CD P C Board-Component Side and Solder Side


(M122A) CD SUB I P C B
(M79) CD DECODER P C B
(M128) CD SUB P C B
(M82) CD LAMP P C B
(M131) CD SENSOR P C B
(M78) CD CONTROL P C B
(M122A) CD SUB I P C B
(M79) CD DECODER P C B
(M82) CD LAMP P C B
(M128) CD SUB P C B
(M131) CD SENSOR P C B
(M78) CD CONTROL P C B

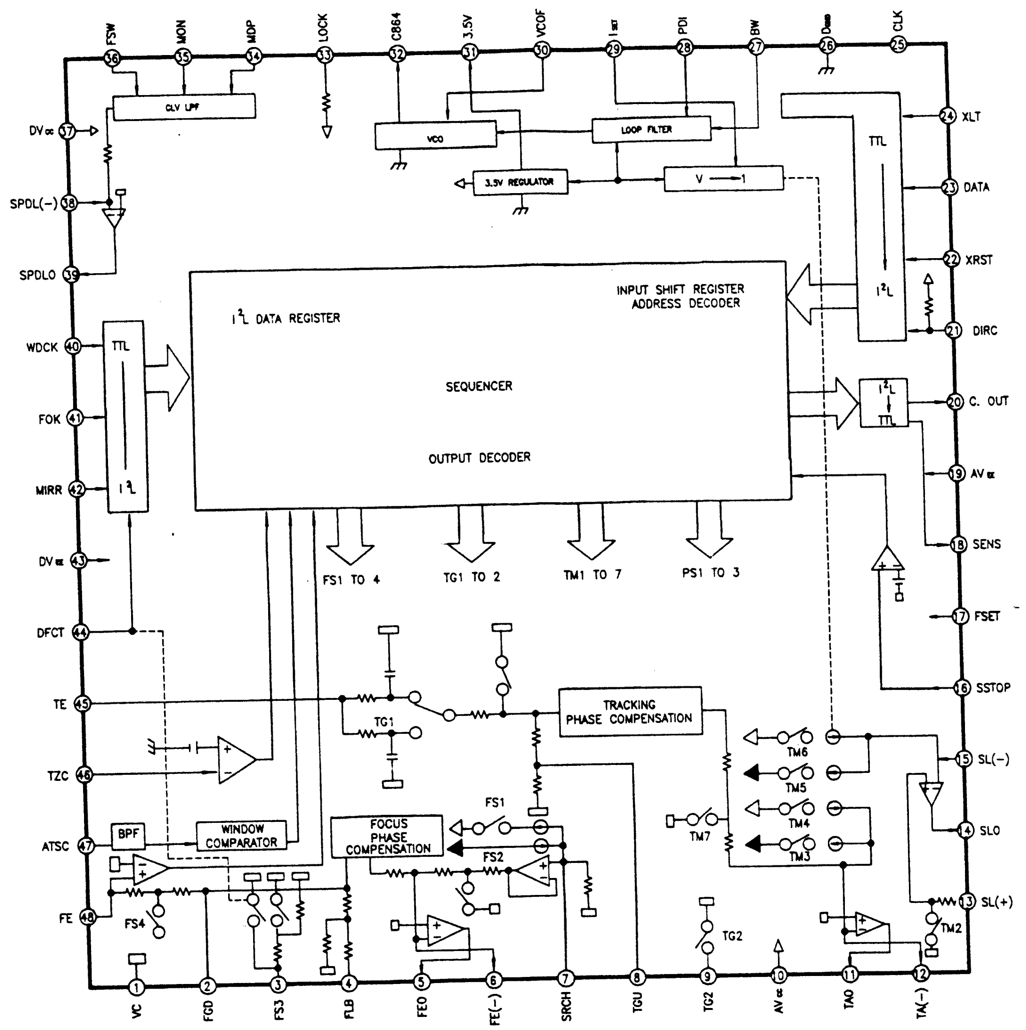
IC BLOCK (CD)

IC001 CXA1081M



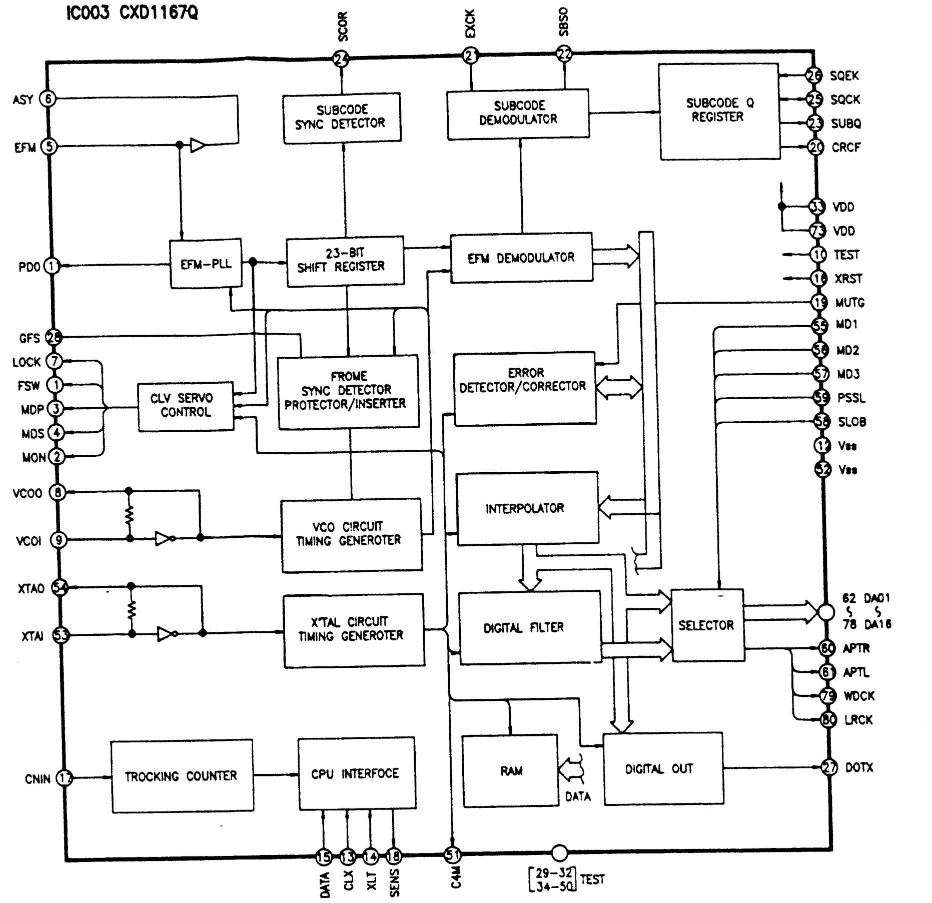
RFI
RFO
RF(-)
P/N
LD
PD
PD1
PD2
VC
F
E
EO
E1
VR
CC2
VCC
LD ON
FDK
EFM
ASY
DGND
CB
CP
MIRR
DEFECT
TE
FE
BIAS
VEE
CC1
CURRENT REFERENCE
VOLTAGE REFERENCE
LEVEL SHIFT
x0.5
FOR COMP-ARATOR
FOK AMP
APC PD AMP
EFM COMPARATOR
RF SUMMING AMP
AUTO SYMMETRY BUFFER
AUTO ASYMMETRY CONTROL AMP
APC LD AMP
RF I-V AMP(1)
MIRROR AMP
MIRROR HOLD AMP
PEAK HOLD
BOTTOM HOLD
MIRROR DIFFEREN-TIAL AMP
RF I-V AMP(2)
F I-V AMP
DEFECT AMP
MIRROR COMPARATOR
DEFECT BOTTOM HOLD
DEFECT COMPARATOR
E I-V AMP
TRACKING ERROR AMP
FOCUS ERROR AMP
CENTER VOLTAGE BUFFER

IC002 CXA1082BQ



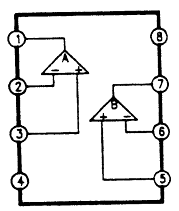
FSW
MON
MDP
LOCK
C864
3.5V
VCOF
ISET
PDI
BW
DGND
CLK
CLV LPF
VCO
LOOP FILTER
3.5V REGULATOR
V → I
XLT
DATA
XRST
DIRC
C. OUT
AVcc
SENS
FSET
SSTOP
SL(-)
SLO
SL(+)
DVcc
SPDL(-)
SPDLO
WDCK
FOK
MIRR
DVEE
DFCT
TE
TZC
ATSC
FE
TTL
I²L
I²L DATA REGISTER
INPUT SHIFT REGISTER ADDRESS DECODER
SEQUENCER
OUTPUT DECODER
FS1 TO 4
TG1 TO 2
TM1 TO 7
PS1 TO 3
TG1
TRACKING PHASE COMPENSATION
TM6
TM5
TM4
TM3
TM7
TM2
TG2
FS1
FS2
FS4
BPF
WINDOW COMPARATOR
FOCUS PHASE COMPENSATION
VC
FGD
FS3
FLB
FEO
FE(-)
SRCH
TGU
TG2
AVEE
TAO
TA(-)

IC003 CXD1167Q



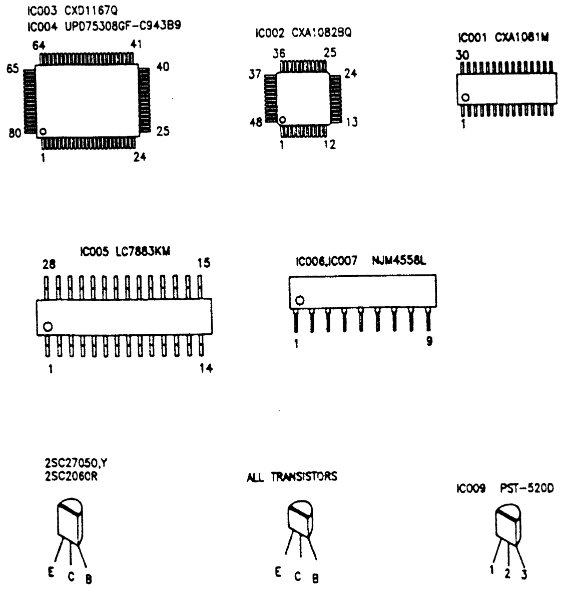
SCOR
EXCK
SBSO
ASY
EFM
PDO
GFS
LOCK
FSW
MDP
MDS
MON
VCOO
VCOI
XTAO
XTAI
CNIN
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q REGISTER
EFM-PLL
23-BIT SHIFT REGISTER
EFM DEMODULATOR
CLV SERVO CONTROL
FROME SYNC DETECTOR PROTECTOR/INSERTER
ERROR DETECTOR/CORRECTOR
VCO CIRCUIT TIMING GENERETOR
INTERPOLATOR
X'TAL CIRCUIT TIMING GENERETOR
DIGITAL FILTER
SELECTOR
TROCKING COUNTER
CPU INTERFOCE
RAM
DATA
DIGITAL OUT
SQEK
SQCK
SUBQ
CRCF
VDD
VDD
TEST
XRST
MUTG
MD1
MD2
MD3
PSSL
SLOB
Vss
Vss
62 DA01
78 DA16
APTR
APTL
WDCK
LRCK
DOTX
DATA
CLK
XLT
SENS
C4M
29-32
34-50
TEST

IC006,007 NJM4558L



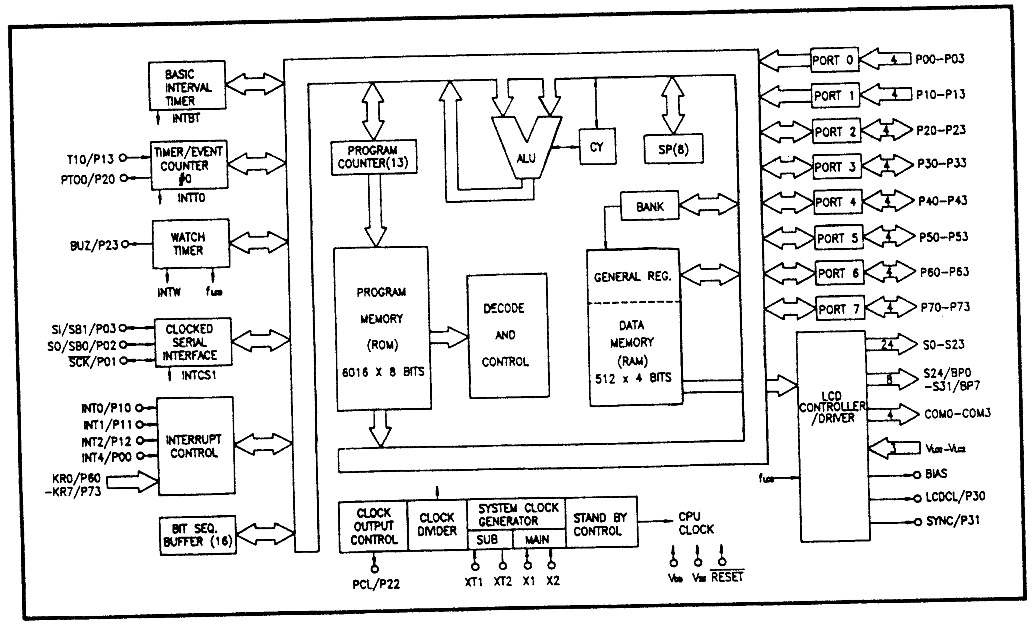
A
B
1
2
3
4
5
6
7
8

IC & TRANSISTORS CONNECTIONS:



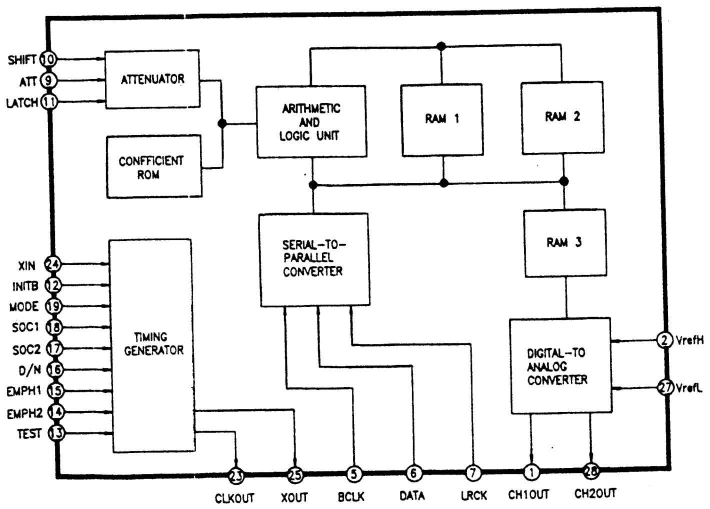
IC003 CXD1167Q
IC004 UPD75308GF-C943B9
64
41
65
40
80
25
1
24
IC002 CXA1082BQ
36
25
37
24
48
13
1
12
IC001 CXA1081M
30
1
IC005 LC7883KM
28
15
1
14
IC006,IC007 NJM4558L
1
9
2SC2705O,Y
2SC2060R
E C B
ALL TRANSISTORS
E C B
IC009 PST-520D
1 2 3

IC004 UPD75308GF-J30-3B9



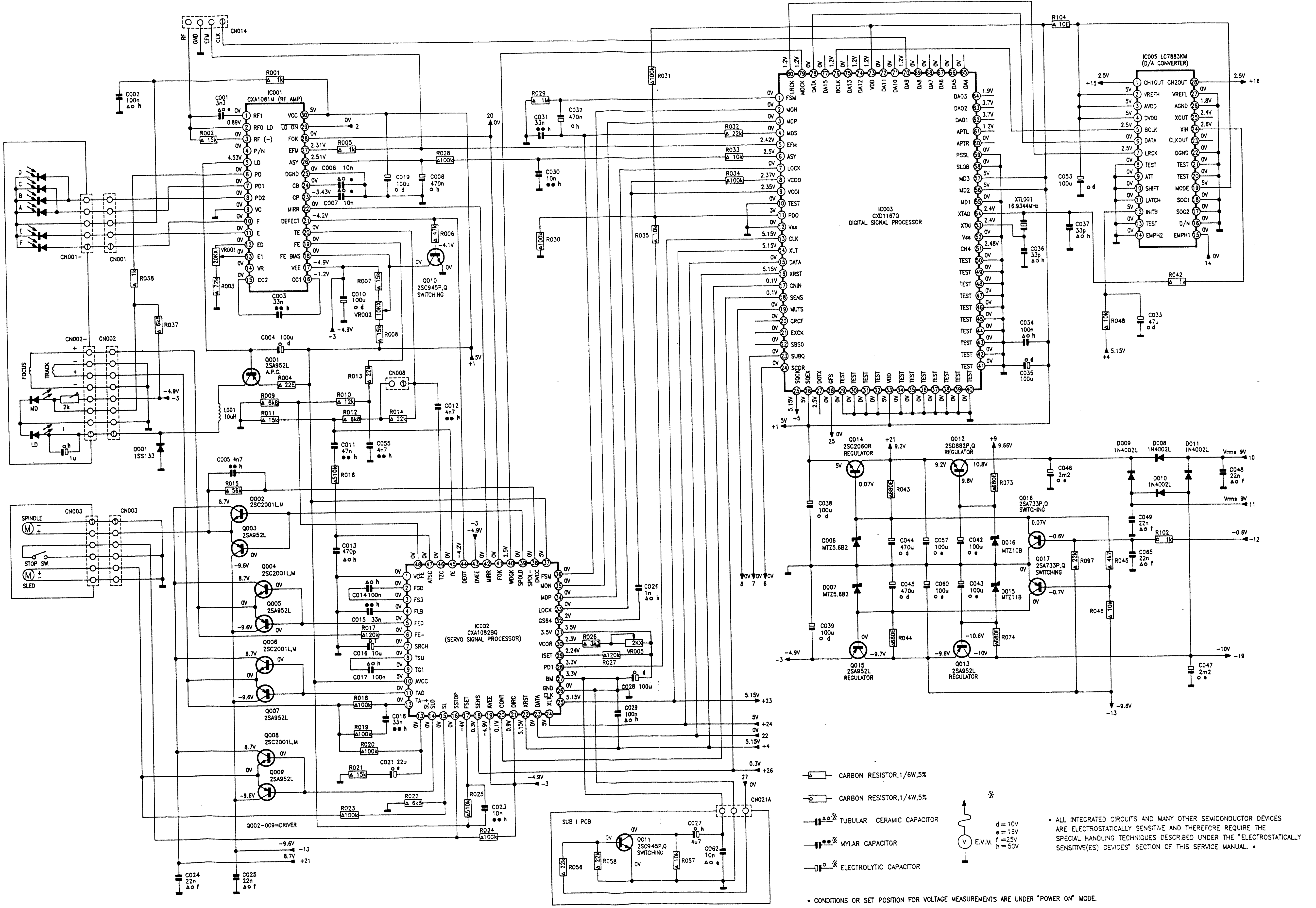
BASIC INTERVAL TIMER
INTBT
T10/P13
PT00/P20
TIMER/EVENT COUNTER #0
INTT0
BUZ/P23
WATCH TIMER
INTW
fLCD
SI/SB1/P03
SO/SB0/P02
SCK/P01
CLOCKED SERIAL INTERFACE
INTCS1
INT0/P10
INT1/P11
INT2/P12
INT4/P00
KR0/P60
-KR7/P73
INTERRUPT CONTROL
BIT SEQ. BUFFER (16)
PROGRAM COUNTER(13)
ALU
CY
SP(8)
BANK
PROGRAM MEMORY (ROM) 6016 X 8 BITS
DECODE AND CONTROL
GENERAL REG.
DATA MEMORY (RAM) 512 x 4 BITS
CLOCK OUTPUT CONTROL
CLOCK DIVIDER
SYSTEM CLOCK GENERATOR
SUB
MAIN
STAND BY CONTROL
CPU CLOCK
PCL/P22
XT1
XT2
X1
X2
VDD
VSS
RESET
PORT 0
PORT 1
PORT 2
PORT 3
PORT 4
PORT 5
PORT 6
PORT 7
P00-P03
P10-P13
P20-P23
P30-P33
P40-P43
P50-P53
P60-P63
P70-P73
LCD CONTROLLER /DRIVER
S0-S23
S24/BP0 -S31/BP7
COM0-COM3
VLC0-VLC2
BIAS
LCDCL/P30
SYNC/P31
fLCD

IC005 LC7883KM



SHIFT
ATT
LATCH
ATTENUATOR
CONFFICIENT ROM
ARITHMETIC AND LOGIC UNIT
RAM 1
RAM 2
XIN
INITB
MODE
SOC1
SOC2
D/N
EMPH1
EMPH2
TEST
TIMING GENERATOR
SERIAL-TO-PARALLEL CONVERTER
RAM 3
DIGITAL-TO ANALOG CONVERTER
VrefH
VrefL
CLKOUT
XOUT
BCLK
DATA
LRCK
CH1OUT
CH2OUT

Schematic Diagram-CD (A)

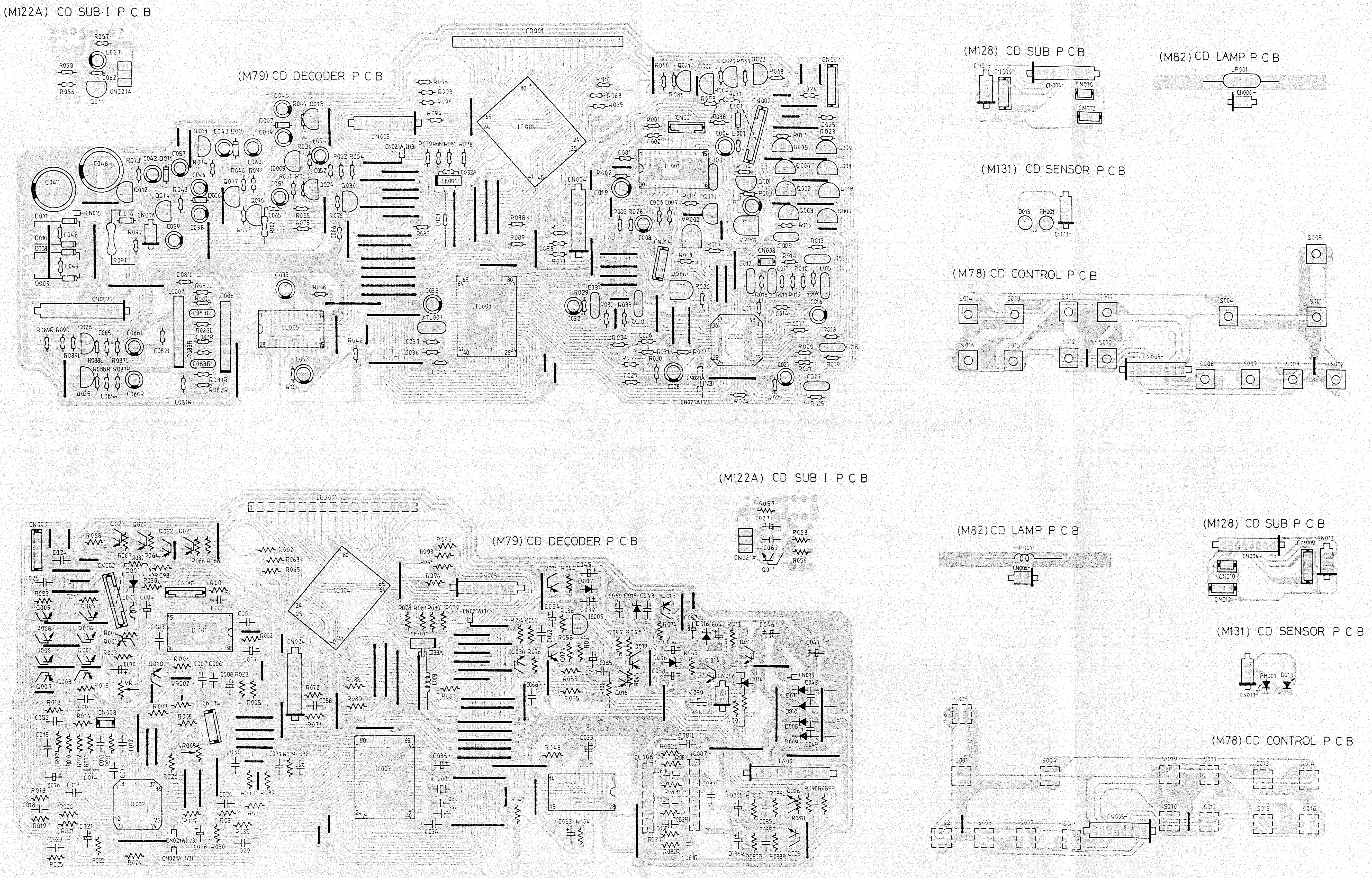


CN014
RF
GND
EFM
CLK
IC001
CXA1081M (RF AMP)
IC002
CXA1082BQ
(SERVO SIGNAL PROCESSOR)
IC003
CXD1167Q
DIGITAL SIGNAL PROCESSOR
IC005 LC7883KM
(D/A CONVERTER)
XTL001
16.9344MHz
CN001
CN002
CN003
CN008
CN021A
FOCUS
TRACK
MD
LD
SPINDLE
STOP SW.
SLED
D001
1SS133
Q001
2SA952L
A.P.C.
Q010
2SC945P,Q
SWITCHING
Q002-009=DRIVER
SUB I PCB
Q011
2SC945P,Q
SWITCHING
Q014
2SC2060R
REGULATOR
Q012
2SD882P,Q
REGULATOR
Q015
2SA952L
REGULATOR
Q013
2SA952L
REGULATOR
Q016
2SA733P,Q
SWITCHING
Q017
2SA733P,Q
SWITCHING
D009
1N4002L
D008
1N4002L
D011
1N4002L
D010
1N4002L
D006
MTZ5.6B2
D007
MTZ5.6B2
D016
MTZ10B
D015
MTZ11B
Vrms 9V
CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
TUBULAR CERAMIC CAPACITOR
MYLAR CAPACITOR
ELECTROLYTIC CAPACITOR
E.V.M.
d = 10V
e = 16V
f = 25V
h = 50V

- ALL INTEGRATED CIRCUITS AND MANY OTHER SEMICONDUCTOR DEVICES ARE ELECTROSTATICALLY SENSITIVE AND THEREFORE REQUIRE THE SPECIAL HANDLING TECHNIQUES DESCRIBED UNDER THE "ELECTROSTATICALLY SENSITIVE(ES) DEVICES" SECTION OF THIS SERVICE MANUAL. •

- CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

CD P C Board-Component Side and Solder Side



(M122A) CD SUB I P C B

(M79) CD DECODER P C B

(M128) CD SUB P C B

(M82) CD LAMP P C B

(M131) CD SENSOR P C B

(M78) CD CONTROL P C B

(M122A) CD SUB I P C B

(M79) CD DECODER P C B

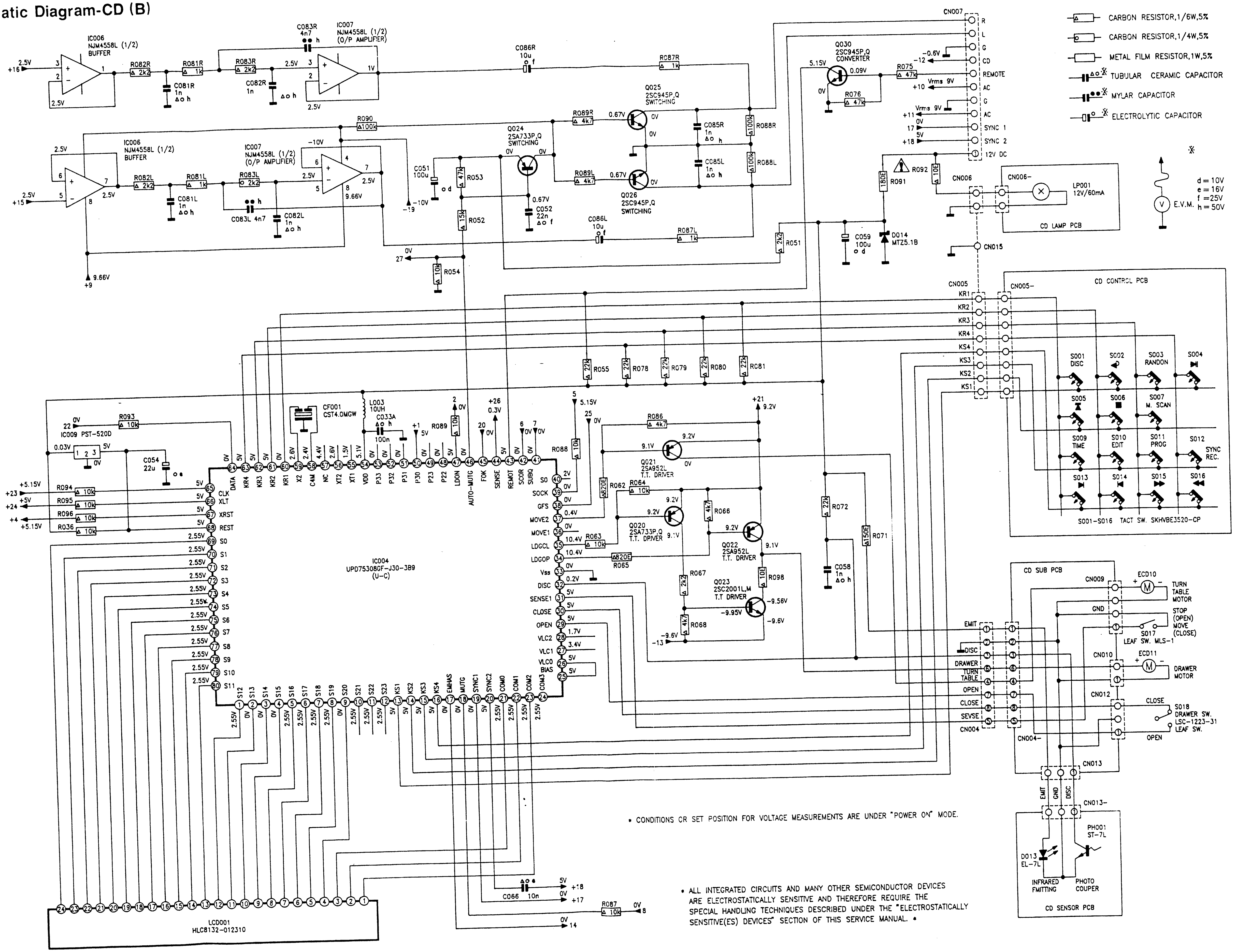
(M82) CD LAMP P C B

(M128) CD SUB P C B

(M131) CD SENSOR P C B

(M78) CD CONTROL P C B

Schematic Diagram-CD (B)


CARBON RESISTOR,1/6W,5%
CARBON RESISTOR,1/4W,5%
METAL FILM RESISTOR,1W,5%
TUBULAR CERAMIC CAPACITOR
MYLAR CAPACITOR
ELECTROLYTIC CAPACITOR
d = 10V
e = 16V
f = 25V
h = 50V
E.V.M.
IC006 NJM4558L (1/2) BUFFER
IC007 NJM4558L (1/2) (O/P AMPLIFIER)
C083R 4n7
R082R 2k2
R081R 1k
R083R 2k2
C081R 1n
C082R 1n
C086R 10u
R087R 1k
R082L 2k2
R081L 1k
R083L 2k2
C081L 1n
C083L 4n7
C082L 1n
R090 100k
C086L 10u
R087L 1k
Q024 2SA733P,Q SWITCHING
Q025 2SC945P,Q SWITCHING
Q026 2SC945P,Q SWITCHING
R089R 4k7
R089L 4k7
C085R 1n
C085L 1n
R088R 100k
R088L 100k
C051 100u
R053 47k
R052 15k
C052 22n
R054 10k
R051 2k2
Q030 2SC945P,Q CONVERTER
R075 47k
R076 47k
CN007
R
L
G
CD
REMOTE
AC
G
AC
SYNC 1
SYNC 2
12V DC
R092 10E
R091 180E
CN006
CN006-
LP001 12V/60mA
CD LAMP PCB
C059 100u
D014 MTZ5.1B
CN015
CN005
CN005-
CD CONTROL PCB
KR1
KR2
KR3
KR4
KS4
KS3
KS2
KS1
S001 DISC
S002
S003 RANDON
S004
S005
S006
S007 M. SCAN
S009 TIME
S010 EDIT
S011 PROG
S012 SYNC REC.
S013
S014
S015
S016
S001-S016 TACT SW. SKHVBE3520-CP
R055 22k
R078 22k
R079 22k
R080 22k
R081 22k
IC009 PST-520D
R093 10k
C054 22u
R094 10k
R095 10k
R096 10k
R036 10k
CF001 CST4.0MGW
L003 10UH
C033A 100n
R089 10k
R088 10k
IC004 UPD75308GF-J30-3B9 (U-C)
R086 4k7
Q021 2SA952L T.T. DRIVER
R064 10k
R062 820E
Q020 2SA733P,Q T.T. DRIVER
R066 4k7
R063 10k
R065 820E
Q022 2SA952L T.T. DRIVER
R067 2k2
R068 4k7
Q023 2SC2001L,M T.T DRIVER
R098 10E
R072 22k
C058 1n
R071 150E
CD SUB PCB
CN009
EC010 TURN TABLE MOTOR
S017 LEAF SW. MLS-1
STOP (OPEN) MOVE (CLOSE)
CN010
EC011 DRAWER MOTOR
CN012
S018 DRAWER SW. LSC-1223-31 LEAF SW.
CLOSE
OPEN
CN004
CN004-
EMIT
DISC
DRAWER
TURN TABLE
OPEN
CLOSE
SEVSE
CN013
CN013-
D013 EL-7L INFRARED EMITTING
PH001 ST-7L PHOTO COUPER
CD SENSOR PCB
LCD001 HLC8132-012310
C066 10n
R087 10k

• CONDITIONS OR SET POSITION FOR VOLTAGE MEASUREMENTS ARE UNDER "POWER ON" MODE.

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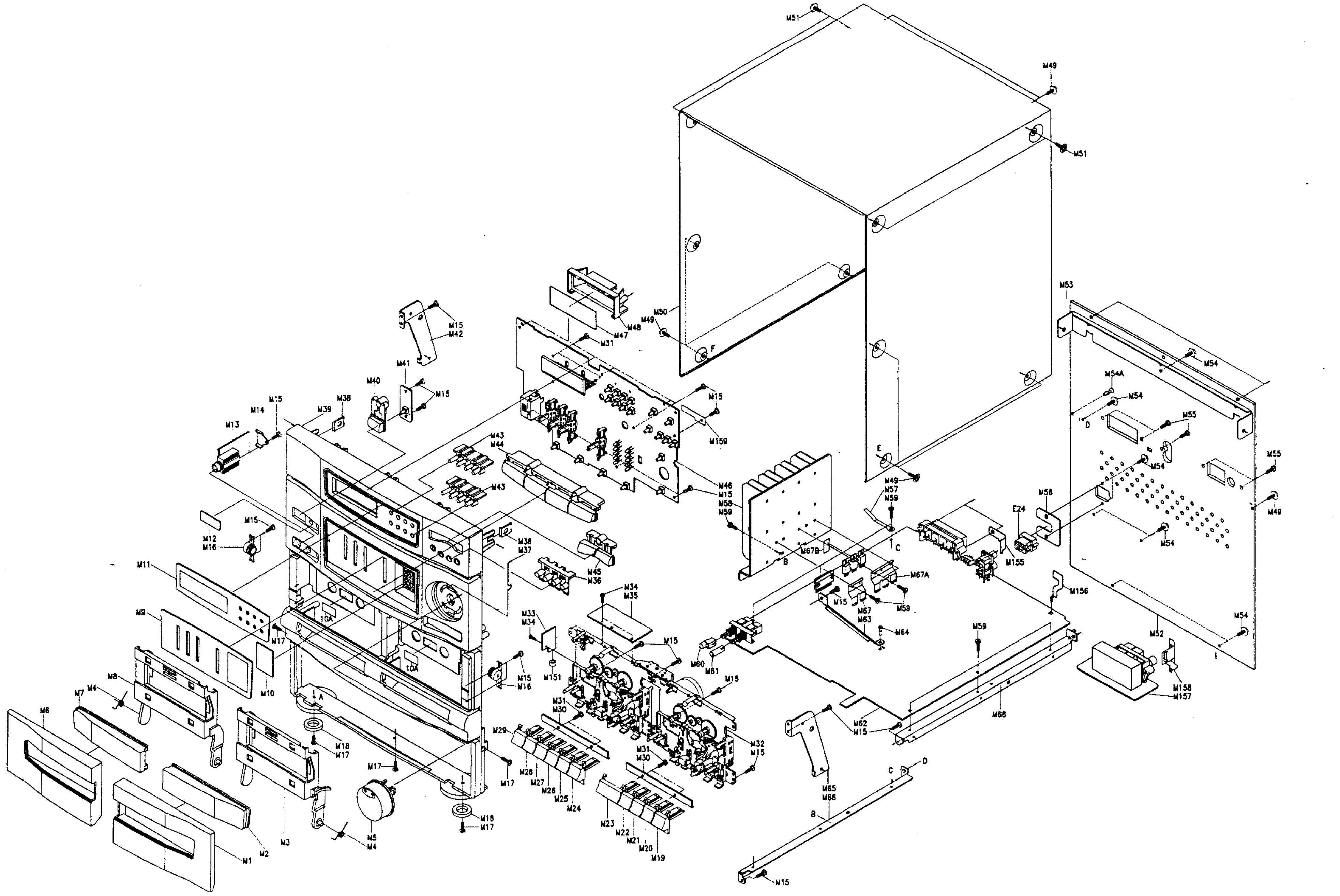
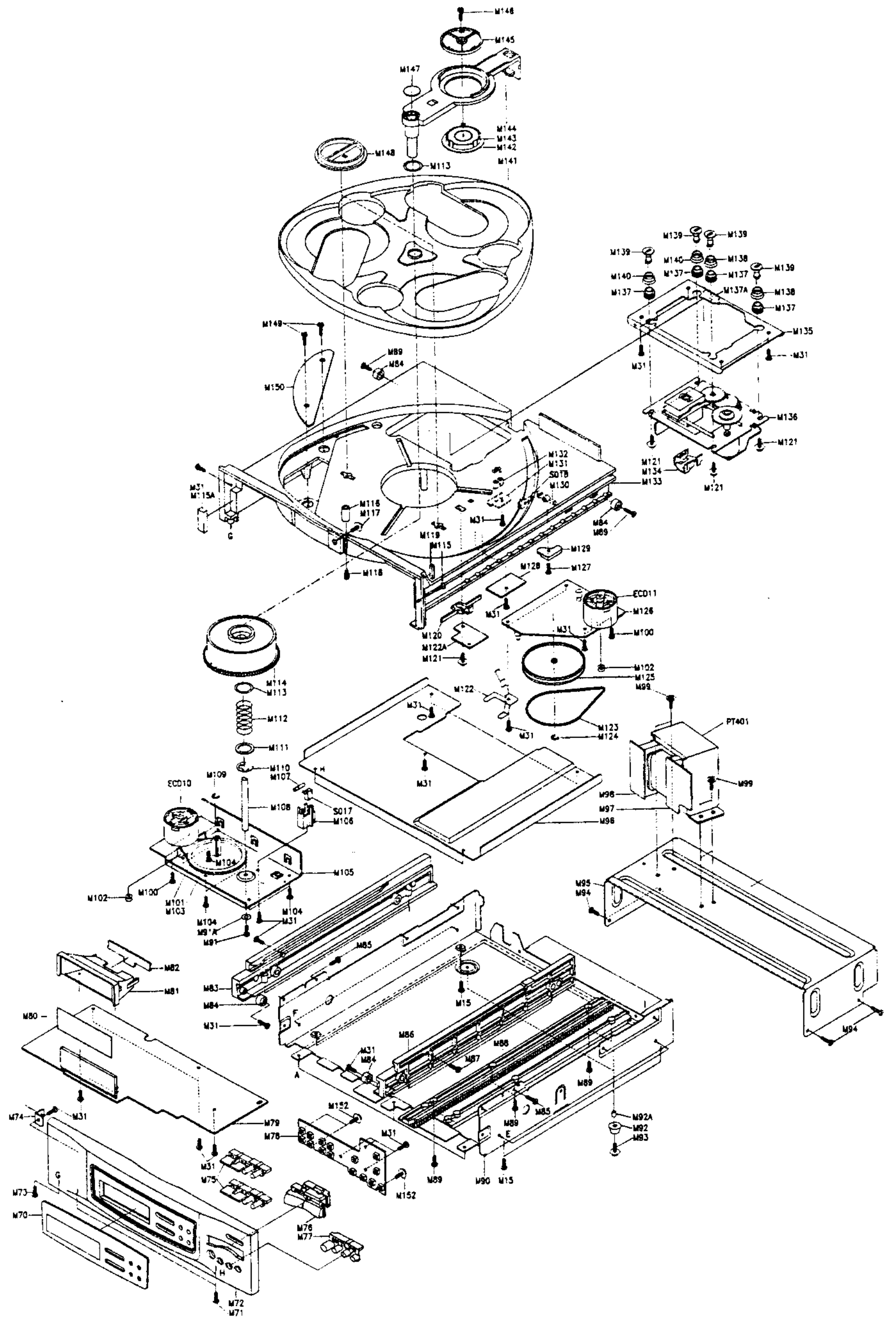
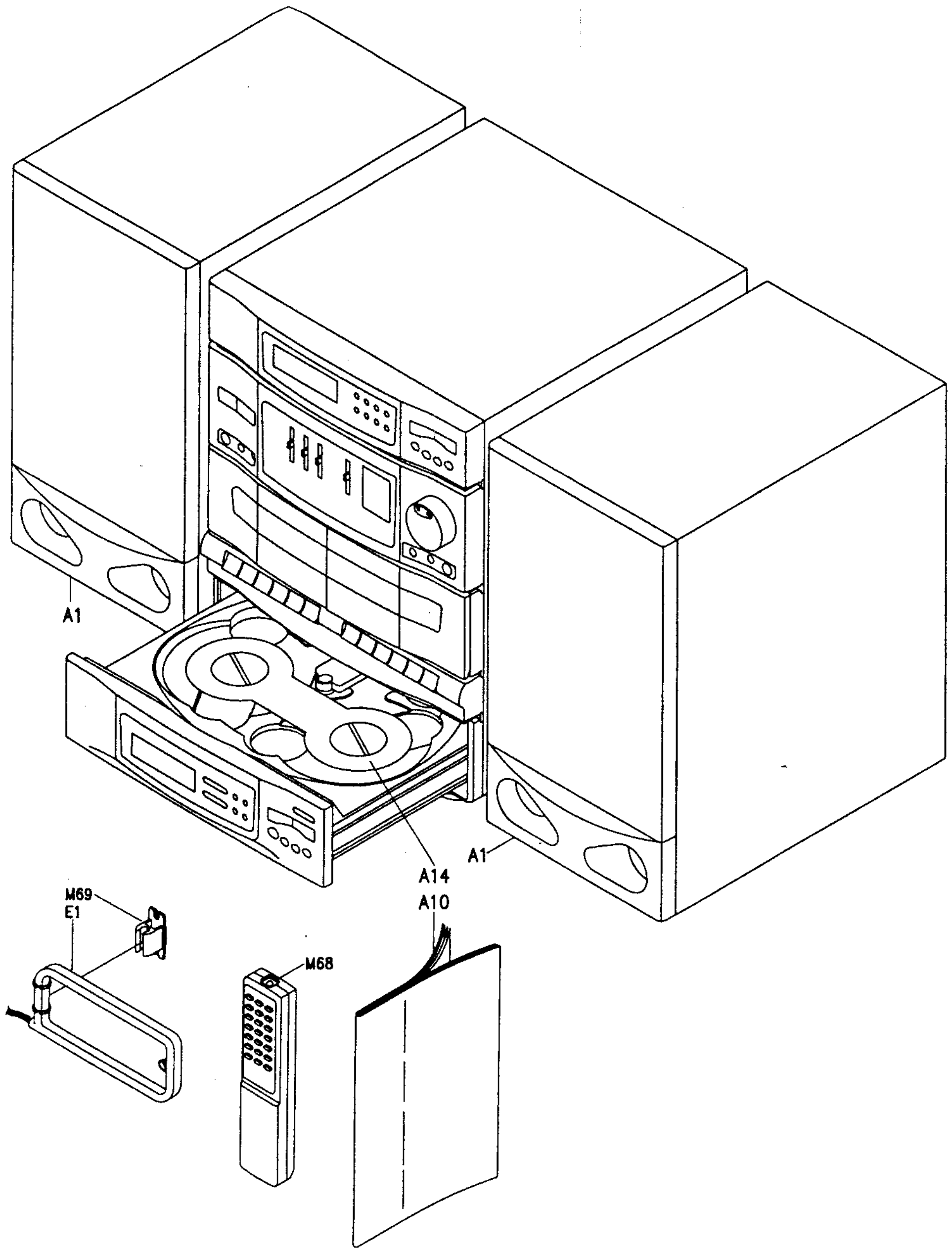
Mechanical Exploded View (A)


M51
M49
M51
M53
M50
M49
F
M48
M47
M31
M15
M42
M41
M15
M40
M15
M159
M15
M14
M13
M38
M39
M54
M54A
M54
D
M55
M43
M44
M43
E
M46
M15
M58
M59
M49
M57
M59
M55
M54
M49
M56
E24
M12
M16
M15
M38
M37
M45
M36
C
B
M67B
M155
M54
M11
M34
M35
M67A
M156
M15
M59
M67
M63
M64
M9
M33
M34
10A
M17
M59
M54
M52
I
M60
M61
M15
M16
M151
M8
M7
M4
M6
M10
10A
A
M15
M62
M15
M66
M158
M157
M29
M31
M30
M32
M15
M18
M17
M17
M28
M27
M26
M25
M24
M31
M30
M15
M65
M66
C
D
B
M5
M4
M18
M17
M23
M22
M21
M20
M19
M3
M2
M1
M15

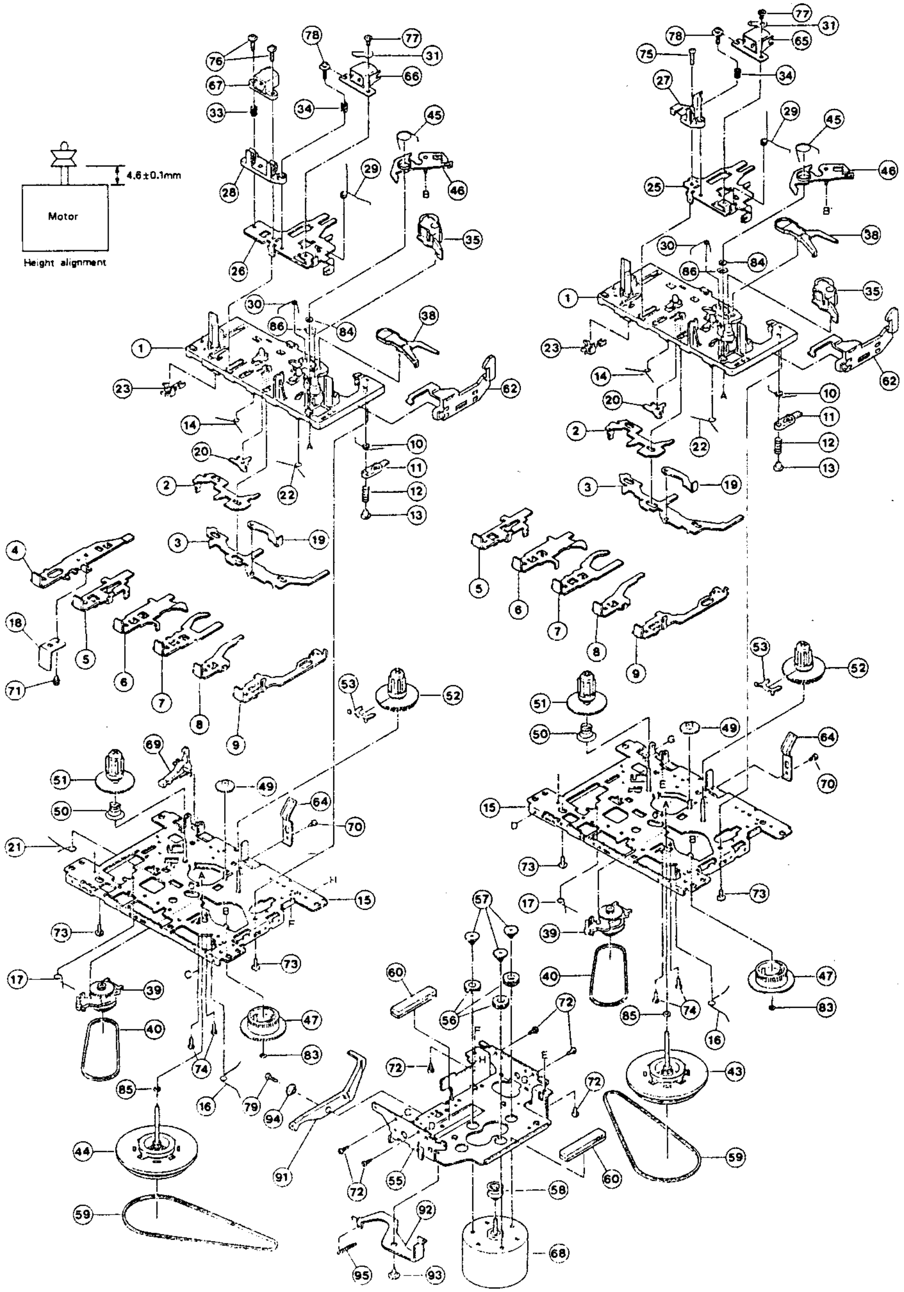
Mechanical Exploded View (B)


M146
M145
M147
M144
M143
M142
M141
M148
M113
M139
M139
M139
M140
M138
M139
M140
M137
M137
M137
M137A
M138
M137
M135
M31
M31
M149
M89
M84
M150
M136
M121
M121
M134
M133
M121
M132
M131
S018
M130
M31
M115A
G
M116
M117
M31
M84
M89
M119
M115
M129
M118
M128
M127
ECD11
M126
M31
M31
M100
M120
M122A
M121
M102
M125
M99
M114
M113
M122
M31
M112
M123
M124
M31
PT401
M111
M31
M110
M107
M109
H
M99
ECD10
M108
S017
M106
M98
M97
M96
M104
M105
M95
M94
M102
M100
M101
M103
M104
M104
M91A
M31
M91
M85
M82
M81
M83
M84
M15
M80
M31
F
M94
M31
M86
M84
M88
M87
A
M89
M85
M152
M89
M92A
M74
M31
M79
M92
M93
M78
M31
M31
M75
G
M89
M90
M15
M152
M73
M70
M76
M77
H
M72
M71

Accessory Exploded View


A1
A1
A14
A10
M69
E1
M68

Tape Deck Exploded View


4.6±0.1mm
Motor
Height alignment
1
2
3
4
5
6
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10
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14
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16
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83
84
85
86
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92
93
94
95
A
B
C
D
E
F
G
H

SCREW LIST - MAIN UNIT

M15	D3 x 10
M17	M3 x 4
M31	D3 x 8
M34	D2 x 5
M49	D3 x 10
M51	D4 x 10
M54	D3 x 8
M55	D3 x 10
M59	D3 x 8
M71	D2.6 x 6
M73	M3 x 6
M85	D3 x 4
M87	D4 x 8
M89	D3 x 6
M91	M3 x 8
M93	D3 x 8
M94	D3 x 6
M99	D4 x 5
M100	M2.6 x 3
M104	D3 x 10
M115	D2.6 x 8
M117	D3 x 8
M121	D3 x 6
M127	D3 x 12
M146	D2.6 x 6
M149	D2.6 x 8
M152	D3 x 8

MECHANICAL PARTS - TAPE MECHANISM

23	4822 278 90575	Leaf Switch
35	4822 403 40516	Pinch roller assy
40	4822 358 30921	RF Belt
58	4822 528 81343	Motor pulley
59	4822 358 31227	Main belt
62	4822 403 53815	Eject slide lever
65	4822 249 10482	Play head MS15R-AA2N1
66	4822 249 10482	Rec/Pb head MS15R-AA2N1
67	4822 249 40303	Erase head LE15B-C1
68	4822 361 21577	Motor SHU-2L00
69	4822 403 20222	Record safety lever
96	4822 278 90717	Leaf switch LSA-1115RK1

NOTE : ONLY THE MENTIONED PARTS ARE NORMAL SERVICE PARTS

MECHANICAL & MISC. PARTS - MAIN UNIT

M1	4822 443 63753		Cassette door (R)
M2	4822 450 61978		Cassette window (R)
M3	4822 256 91994		Cassette holder (R)
M4	4822 492 42669		Cassette door spring
M5	4822 413 51433		Volume knob
M6	4822 443 63754		Cassette door (L)
M7	4822 450 61979		Cassette window (L)
M8	4822 256 91995		Cassette holder (L)
M9	4822 450 61982		Equalizer window
M10	4822 450 61985		LED window
M11	4822 450 61981		Display window
M12	4822 450 61983		Sensor window
M16	4822 522 33302		Gear damper
M18	4822 462 42013		Foot rubber (A)
M19	4822 410 62304		Button - Pause (R)
M20	4822 410 62303		Button - Stop (R)
M21	4822 410 62302		Button - F Fwd (R)
M22	4822 410 62301		Button - Rew (R)
M23	4822 410 62299		Button - Play (R)
M24	4822 410 62309		Button - Pause (L)
M25	4822 410 62308		Button - Stop (L)
M26	4822 410 62307		Button - F Fwd (L)
M27	4822 410 62306		Button - Rew (L)
M28	4822 410 62305		Button - Play (L)
M29	4822 410 62298		Button - Record
M32	4822 691 20837		T/Deck AC TN-21ZSW-1272
M36	4822 410 62314		Memory knob
M37	4822 492 71214		Volume spring
M38	4822 505 10807		Escutcheon nut
M39	4822 426 51655		Front Escutcheon
M40	4822 410 62311		Power knob
M43	4822 410 62293		Preset button
M44	4822 410 62297		Function button
M45	4822 410 62294		Tuning button
M60	4822 410 62296		HSD knob
M61	4822 410 62295		Bass boost knob
M63A	4822 530 80692		Earth washer
M64	4822 532 51847		P-rivet 3 x 4.5
M67	4822 492 71215		spring transistor B
M67A	4822 492 71213		IC Spring plate
M68	4822 218 10511		Remote control assy
M69	4822 256 91993		Antenna holder assembly
M70	4822 450 61984		CD display window
M72	4822 444 40606		CD Front Escutcheon
M75	4822 410 62315		Control knob (B)
M76	4822 410 62313		CD play knob
M77	4822 410 62312		Control knob (A)
M84	4822 528 90863		Pulley (side)
M92	4822 462 42014		Foot rubber (B)
M101	4822 358 31225		Belt 60 x 1.6mm
M102	4822 528 81481		Motor pulley
M103	4822 528 90862		Wheel
M106	4822 278 90715		Switch box
M107	4822 535 93352		Switch pin
M112	4822 492 71216		Clutch spring
M114	4822 522 33303		Cam gear
M116	4822 325 60387		Sleeve
M118	4822 532 12198		Sleeve spring
M120	4822 466 82964		Guide plate
M122	4822 466 82965		Earth plate
M123	4822 358 31226		Belt 58 x 1.6mm
M125	4822 522 33304		Gear wheel
M130	4822 402 61463		Shaft (lever switch)
M134	4822 401 11472		Wire control holder
M136	4822 691 30296		CD deck assembly
M137	4822 529 10284		CDK90 cushion
M138	4822 492 71218		Spring (white color)
M139	4822 532 52499		CDK90 holder
M140	4822 492 71217		Spring (black color)
M141	4822 528 10859		Turntable
M142	4822 532 52498		Magnetic holder
M143	4822 526 20204		Magnetic
M145	4822 462 71875		Magnetic cover
M148	4822 417 20197		Transit lock
M150	4822 426 90112		Main base cover
A1	4822 445 10367		Loudspeaker box assy
A10	4822 736 21871		Instruction for use
A14	4822 736 21613		CD Lock sheed
E1	4822 303 50075		AM Loop antenna
E24	4822 325 80504		Cord stopper
E25	4822 321 10926	△	Mains Cord

NOTE : ONLY THE MENTIONED PARTS ARE NORMAL SERVICE PARTS

ELECTRICAL PARTS - MAIN & FRONT PC BOARDS

MISCELLANEOUS

F401	4822 070 33152	△	Fuse T3.15A 250V
F402	4822 070 38001	△	Fuse T800mA 250V
FE101	4822 210 10524		Tuner Unit FE415-G11
JK102	4822 290 81552		2P Antenna terminal
JK201	4822 265 20423		2P RCA socket
JK501	4822 264 30197		Headphone socket
JK502	4822 290 81541		4P Loudspeaker terminal
LCD001	4822 130 91195		LCD HLC9861-012212
LM001	4822 134 41128		Lamp 6V 60mA
LM002	4822 134 41128		Lamp 6V 60mA
PT401	4822 146 31198	△	Power Transformer
S001	4822 276 13329		Tact Switch
S002	4822 276 13329		Tact Switch
S003	4822 276 13329		Tact Switch
S004	4822 276 13329		Tact Switch
S005	4822 276 13329		Tact Switch
S006	4822 276 13329		Tact Switch
S007	4822 276 13329		Tact Switch
S008	4822 276 13329		Tact Switch
S009	4822 276 13329		Tact Switch
S010	4822 276 13329		Tact Switch
S011	4822 276 13327		Tact Switch
S012	4822 276 13327		Tact Switch
S013	4822 276 13329		Tact Switch
S014	4822 276 13329		Tact Switch
S015	4822 276 13329		Tact Switch
S016	4822 276 13329		Tact Switch
S017	4822 276 13329		Tact Switch
S018	4822 276 13329		Tact Switch
S019	4822 276 13329		Tact Switch
S020	4822 276 13329		Tact Switch
S021	4822 276 13329		Tact Switch
S301	4822 276 12256		Rec/Pb Switch
S302	4822 276 13331		HSD Switch
S303	4822 277 21666		Grid Switch
S501	4822 276 13331		Bass boost Switch
SEN001	4822 214 52031		Remote RCR LTM-8834P

⊣⊢

C001	4822 124 41754		0.1F 5.5V Gold
C401	4822 124 80469		3300µF 20% 50V
C402	4822 124 80468		1000µF 20% 50V
C409	4822 124 80468		1000µF 20% 50V
C417	4822 121 70265	△	470pF AC 400V
C521	4822 124 80468		1000µF 20% 50V
C522	4822 124 80468		1000µF 20% 50V
TC101	4822 125 50628		Trimmer 10pF
TC102	4822 125 50628		Trimmer 10pF
TC103	4822 125 50629		Trimmer 20pF
TC104	4822 125 50634		Trimmer 30pF
TC105	4822 125 50634		Trimmer 30pF

FR401	4822 117 10315	△	0.47Ω 1W Fuse
FR402	4822 111 91493	△	1Ω 0.5W Fuse
FR403	4822 111 91493	△	1Ω 0.5W Fuse
R028	4822 116 81464	△	10Ω 0.5W Fuse
R407	4822 117 10143	△	820Ω 3W Flame proof
R411	4822 113 80619	△	10Ω 10W
R523	4822 117 10119		220Ω 0.5W
R524	4822 117 10119		220Ω 0.5W
R530	4822 117 10121	△	1k 1W Flame proof
R531	4822 117 10122	△	330Ω 2W Flame proof
SVR101	4822 105 11114		Trimmer 10KX
SVR301	4822 105 11115		Trimmer 5KX
VR002	4822 102 10456		Potm 100KB x 2
VR003	4822 102 10456		Potm 100KB x 2
VR004	4822 102 10456		Potm 100KB x 2
VR006	4822 101 90229		Potm 100KW

CF101	4822 242 72243	Ceram Filter 10.7MHz
CF102	4822 242 72243	Ceram Filter 10.7MHz
CF103	4822 242 81377	Ceram Filter 450kHz
L104	4822 157 70205	AM Antenna Coil
L105	4822 157 70321	LW Antenna Coil
L110	4822 157 70206	Peaking Coil 22µH
L301	4822 157 53601	Choke 470µH
T102	4822 157 60041	FM Detector coil
T103	4822 156 21685	MW Osc Coil
T104	4822 157 60039	AM IFT coil
T105	4822 157 60038	LW Osc coil
T301	4822 157 70208	Bias Osc Coil
X001	4822 242 81326	X'tal 4.5MHz

D001	4822 130 81524		1SS176
D002	4822 130 81524		1SS176
D004	4822 130 81524		1SS176
D005	4822 130 81524		1SS176
D006	4822 130 81524		1SS176
D007	4822 130 81524		1SS176
D008	4822 130 81524		1SS176
D009	4822 130 81524		1SS176
D010	4822 130 81524		1SS176
D011	4822 130 81524		1SS176
D012	4822 130 81524		1SS176
D013	4822 130 81524		1SS176
D015	4822 130 81524		1SS176
D016	4822 130 30621		1N4148
D018	4822 130 30621		1N4148
D020	4822 130 83205		LTL4222N-011A Red
D021	4822 130 83063		LTL4232N-021 Grn
D022	4822 130 83063		LTL4232N-021 Grn
D023	4822 130 83063		LTL4232N-021 Grn
D024	4822 130 83063		LTL4232N-021 Grn
D025	4822 130 83063		LTL4232N-021 Grn
D026	4822 130 83063		LTL4232N-021 Grn
D027	4822 130 83063		LTL4232N-021 Grn
D028	4822 130 83063		LTL4232N-021 Grn
D029	4822 130 83063		LTL4232N-021 Grn
D030	4822 130 83063		LTL4232N-021 Grn
D031	4822 130 81524		1SS176
D103	4822 130 81565		1SV149BX2
D105	4822 130 81524		1SS176
D106	4822 130 81524		1SS176
D107	4822 130 81524		1SS176
D108	4822 130 32366		RD5.6EB2
D109	4822 130 81524		1SS176
D110	4822 130 30621		1N4148
D201	4822 130 32366		RD5.6EB2
D301	4822 130 81524		1SS176
D302	4822 130 81524		1SS176
D303	4822 130 81524		1SS176
D304	4822 130 81524		1SS176
D305	4822 130 81524		1SS176
D306	4822 130 81524		1SS176
D307	4822 130 81524		1SS176
D308	4822 130 83512		RD3.0EB2
D309	4822 130 30621		1N4148
D310	4822 130 81524		1SS176
D311	4822 130 81524		1SS176
D312	4822 130 81524		1SS176
D313	4822 130 30621		1N4148
D317	4822 130 81524		1SS176
D318	4822 130 81524		1SS176
D319	4822 130 30621		1N4148
D320	4822 130 30621		1N4148
D321	4822 130 30621		1N4148
D401	4822 130 80713	△	20D2L
D402	4822 130 80713	△	20D2L
D403	4822 130 33769	△	1N4002L
D404	4822 130 32668		RD15EB2
D405	4822 130 32668		RD15EB2
D502	4822 130 30621		1N4148

IC001	4822 209 31857		LC7230-8307
IC002	4822 209 71876		BA3824LS
IC003	4822 209 70308		BA6124
IC004	4822 209 70308		BA6124
IC102	4822 209 60658		LA1805
IC201	4822 209 72748		LC7821
IC202	4822 209 73303		NJM4558S
IC203	4822 209 72635		LC7535
IC301	4822 209 71871		TA7784P
IC302	4822 209 71949		BA3312N
IC401	4822 209 73096	△	NJM78M05A
IC402	4822 209 81726		MC7812CT
IC403	4822 209 32024	△	NJM7824A
IC502	4822 209 31855		LA4282
IC503	4822 209 73303		NJM4558S

Q001	4822 130 61867		2SA733P,Q
Q002	4822 130 42594		DTC144ES
Q102	4822 130 41595		2SC167
Q103	4822 130 63173		2SK192AY
Q104	4822 130 41198		2SC945P,Q
Q105	4822 130 41198		2SC945P,Q
Q106	4822 130 41198		2SC945P,Q
Q107	4822 130 61867		2SA733P,Q
Q108	4822 130 41595		2SC167
Q109	4822 130 41595		2SC167
Q110	4822 130 41595		2SC167
Q111	4822 130 61867		2SA733P,Q
Q113	4822 130 41198		2SC945P,Q
Q114	4822 130 41198		2SC945P,Q
Q115	4822 130 61867		2SA733P,Q
Q116	4822 130 41198		2SC945P,Q
Q117	4822 130 41198		2SC945P,Q
Q118	4822 130 41651		2SC2001L
Q119	4822 130 41198		2SC945P,Q
Q120	4822 130 61629		2SC2878A
Q201	4822 130 41198		2SC945P,Q
Q202	4822 130 41198		2SC945P,Q
Q301	4822 130 41198		2SC945P,Q
Q302	4822 130 41198		2SC945P,Q
Q303	4822 130 41198		2SC945P,Q
Q304	4822 130 41198		2SC945P,Q
Q305	4822 130 41198		2SC945P,Q
Q306	4822 130 41198		2SC945P,Q
Q309	4822 130 61867		2SA733P,Q
Q312	4822 130 41198		2SC945P,Q
Q313	4822 130 41198		2SC945P,Q
Q314	4822 130 61867		2SA733P,Q
Q315	4822 130 41198		2SC945P,Q
Q316	4822 130 41198		2SC945P,Q
Q317	4822 130 61867		2SA733P,Q
Q318	4822 130 61867		2SA733P,Q
Q319	4822 130 41198		2SC945P,Q
Q320	4822 130 63172		2SC2705O,Y
Q321	4822 130 41198		2SC945P,Q
Q322	4822 130 41651		2SC2001L
Q323	4822 130 41198		2SC945P,Q
Q325	4822 130 42594		DTC144ES
Q326	4822 130 42594		DTC144ES
Q327	4822 130 61867		2SA733P,Q
Q328	4822 130 42682		DTA144ES
Q401	4822 130 63169	△	2SB826R
Q402	4822 130 63171		2SC2002K
Q403	4822 130 63172	△	2SC27050,Y
Q404	4822 130 63168	△	2SA1145Y
Q501	4822 130 61629		2SC2878A
Q502	4822 130 61629		2SC2878A
Q503	4822 130 61867		2SA733P,Q

NOTE : ONLY THE MENTIONED PARTS ARE NORMAL SERVICE PARTS

ELECTRICAL PARTS - CD PC BOARD & ASSEMBLY

MISCELLANEOUS

ECD10	4822 361 21578	T/T Motor MMN-6E9D1
ECD11	4822 361 21579	Drawer Motor MEN-7E9T2
LCD001	4822 130 91196	LCD Display
LP001	4822 134 41129	Lamp 12V 60mA
PH001	4822 130 83209	ST-7L
S001	4822 276 13328	Tact Switch
S002	4822 276 13328	Tact Switch
S003	4822 276 13328	Tact Switch
S004	4822 276 13328	Tact Switch
S005	4822 276 13328	Tact Switch
S006	4822 276 13328	Tact Switch
S007	4822 276 13328	Tact Switch
S009	4822 276 13328	Tact Switch
S010	4822 276 13328	Tact Switch
S011	4822 276 13328	Tact Switch
S012	4822 276 13328	Tact Switch
S013	4822 276 13328	Tact Switch
S014	4822 276 13328	Tact Switch
S015	4822 276 13328	Tact Switch
S016	4822 276 13328	Tact Switch
S017	4822 278 90718	Leaf Switch MLS-1
S018	4822 278 90716	Leaf Switch LSC-1223

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C046	4822 124 20779	2200μF 50% 16V
C047	4822 124 20779	2200μF 50% 16V

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R091	4822 117 10141 △	180Ω 1W Flame proof
VR001	4822 101 90234	Trimmer 20KX
VR002	4822 101 90232	Trimmer 10KX
VR005	4822 101 90233	Trimmer 2KX

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L001	4822 157 70213	Peaking Coil 10μH
L003	4822 157 70213	Peaking Coil 10μH
CF001	4822 242 81329	Resonator 4MHz
XTL001	4822 242 81327	X'tal 16.9344MHz

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D001	4822 130 32778	1SS133
D006	4822 130 83206	MTZ5.6B2
D007	4822 130 83206	MTZ5.6B2
D008	4822 130 33769	1N4002L
D009	4822 130 33769	1N4002L

PCS 63 698

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D010	4822 130 33769	1N4002L
D011	4822 130 33769	1N4002L
D013	4822 130 83204	EL-7L
D014	4822 130 82703	MTZ5.1B
D015	4822 130 82689	MTZ11B
D016	4822 130 83207	MTZ10B

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IC001	4822 209 63138	CXA1081M
IC002	4822 209 61381	CXA1082BQ
IC003	4822 209 30131	CXD1167Q
IC004	4822 209 31875	UPD75308GF-J30-3B9
IC005	4822 209 31856	LC7883KM
IC006	4822 209 30182	NJM4558L
IC007	4822 209 30182	NJM4558L
IC009	4822 209 31865	PST-520D

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Q001	4822 130 41959	2SA952L
Q002	4822 130 41651	2SC2001L,M
Q003	4822 130 41959	2SA952L
Q004	4822 130 41651	2SC2001L,M
Q005	4822 130 41959	2SA952L
Q006	4822 130 41651	2SC2001L,M
Q007	4822 130 41959	2SA952L
Q008	4822 130 41651	2SC2001L,M
Q009	4822 130 41959	2SA952L
Q010	4822 130 41198	2SC945P,Q
Q011	4822 130 41198	2SC945P,Q
Q012	4822 130 60678	2SD882P
Q013	4822 130 41959	2SA952L
Q014	4822 130 63104	2SC2060R
Q015	4822 130 41959	2SA952L
Q016	4822 130 61867	2SA733P,Q
Q017	4822 130 61867	2SA733P,Q
Q020	4822 130 61867	2SA733P,Q
Q021	4822 130 41959	2SA952L
Q022	4822 130 41959	2SA952L
Q023	4822 130 41651	2SC2001L,M
Q024	4822 130 61867	2SA733P,Q
Q025	4822 130 41198	2SC945P,Q
Q026	4822 130 41198	2SC945P,Q
Q030	4822 130 41198	2SC945P,Q

NOTE : ONLY THE MENTIONED PARTS ARE NORMAL SERVICE PARTS